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THE ARCHITECTS' & BUILDERS' JOURNAL.

*A Weekly Journal for Architects Surveyors
Builders and Constructional Engineers.*

*It is our aim, our ambition, our aspiration even,
to build our Journal worthily and well, not
for the hour only, but for future years; for the
few men in the forefront of an enduring and
a laborious art; for the disciplined ranks of a
distinguished profession; for the young men—
Architects to be—and for all who love a clustered
column or a flying buttress, a traceried window
or a Greek frieze; for the man, too, who honestly
plumbs a jam.*

CAXTON HOUSE, WESTMINSTER.

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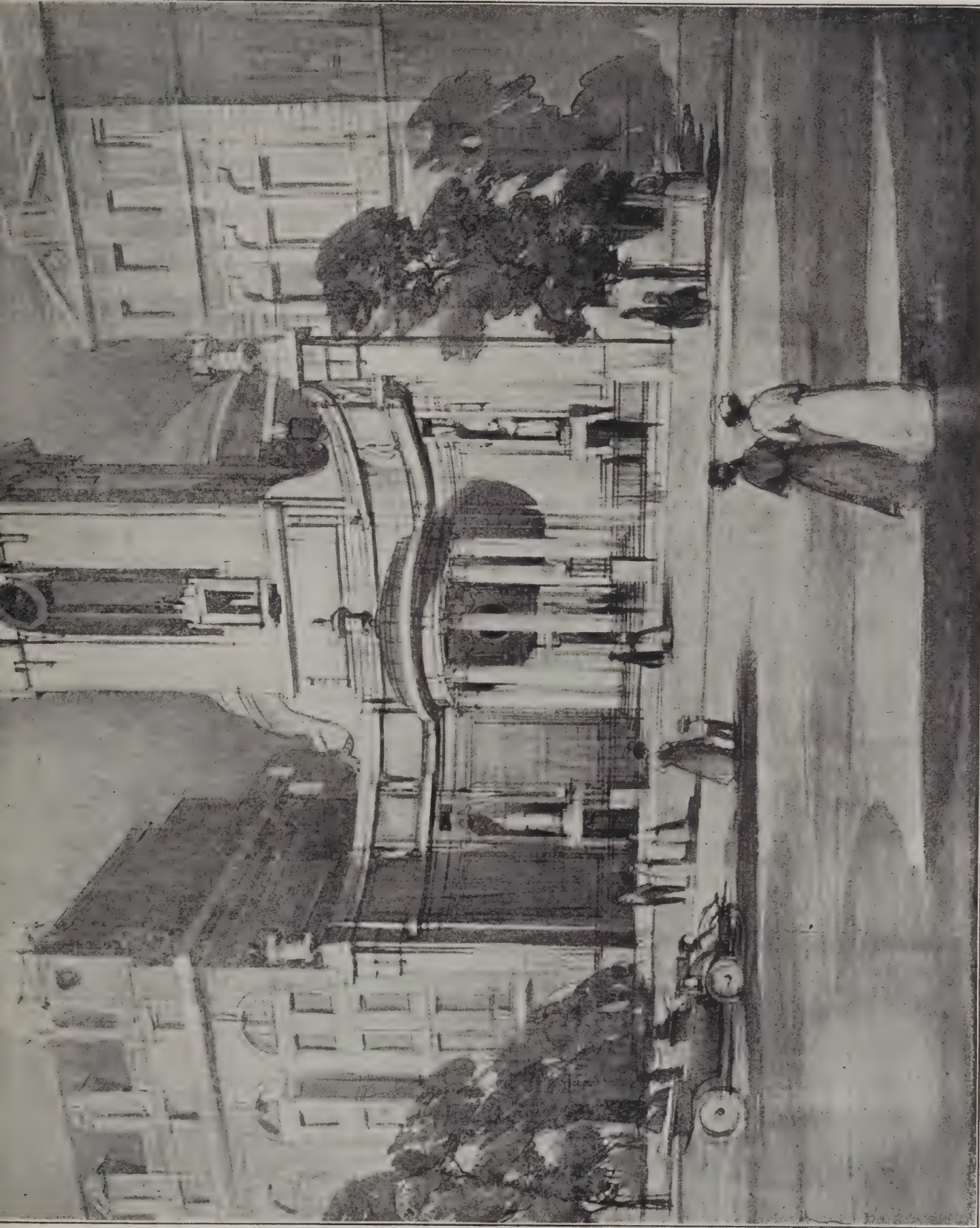
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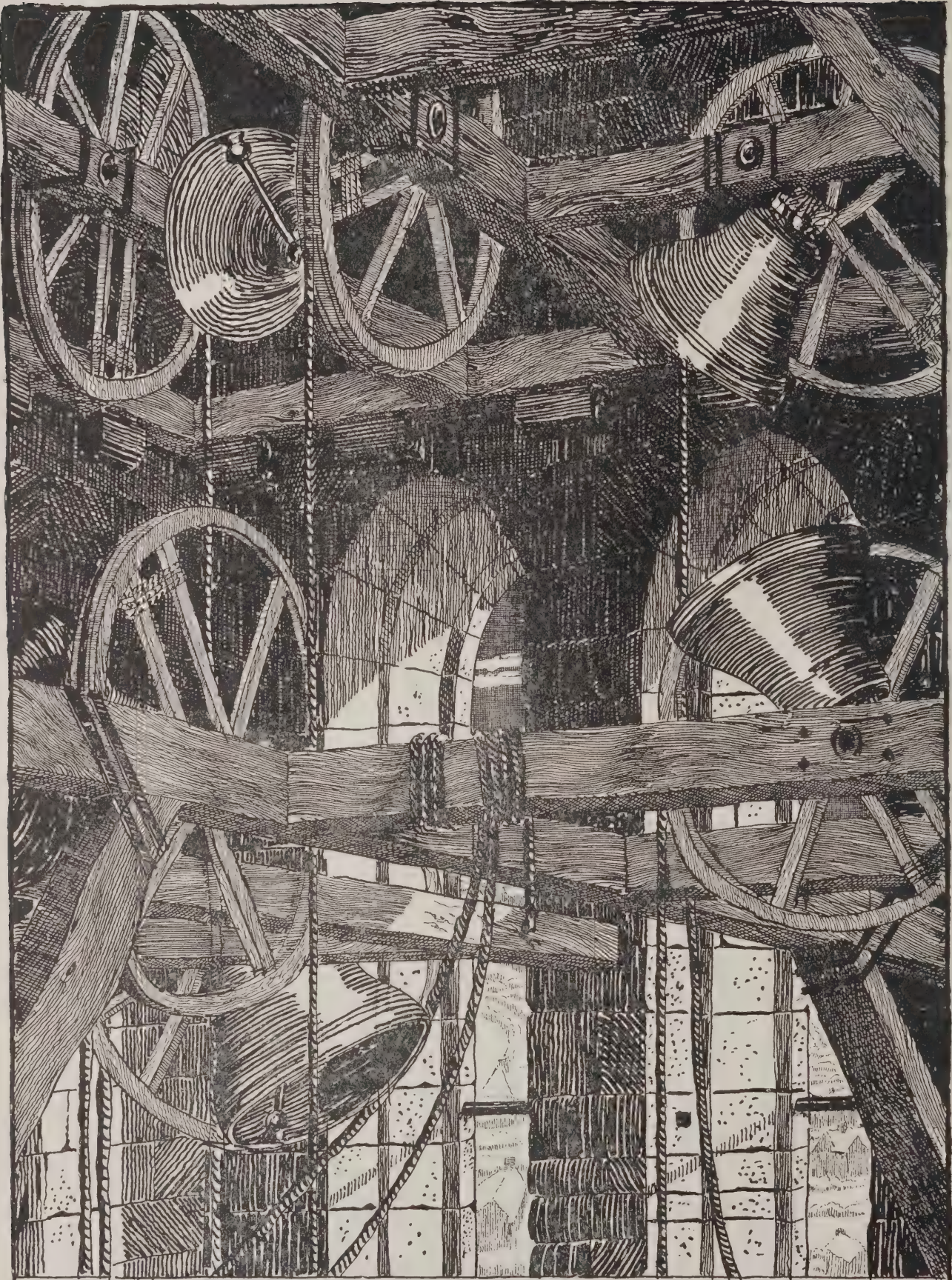
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NOTE : The List of Contents will be found on page V. of the front advertisements.

The New Architectural Centre in London.



VERY now and then there develops, in some quarter of London, a building movement, generally connected with some large street improvement or the laying out of a new building estate, which tends to a local architectural development with a local character of its own. The formation of the Bloomsbury squares and streets was one

instance, which perhaps would hardly be regarded now as an architectural development; it was an architecture of negation, of prim, plain brickwork externally, concealing a great deal of charming and tasteful interior detail, but admitting hardly anything of exterior architectural embellishment. Plain as it is, however, this architecture has a certain character, and whatever exterior detail was admitted in the shape of fanlight designs, front-door casings, and iron railings, was, in its quiet way, in excellent taste. The alterations which have been made in some of these Bloomsbury streets and squares, with a view of rendering them, it is supposed, more attractive to possible residents, have not been improvements; and the great gewgaw hotel in Russell Square makes the unspoiled Bedford Square quite attractive by comparison. Harley Street and Wimpole Street come into the same category; once fashionable streets, in days when interior refinement and taste in a town home were more prized than external display.

The Regent Street epoch followed, the largest and most important London street architecture development of the last century, which extended its influence also to Portland Place and the terraces of Regent's Park. Brick had given way to cement now; it had been discovered that the charms of Classic architecture could be realised, after a fashion, without the expense of stone; and things went on merrily on this line, the example spreading widely to the squares and streets of the Hyde Park and Kensington districts. But the notable point about Regent Street was that it was a conscious and elaborate attempt to treat a long street as one comprehensive architectural design. So important was this considered, that long panoramic elevations of both sides of the street were made and are now preserved in the Crace collection at the British Museum. The comprehensive design has been much cut into of late years, which, considering modern commercial conditions, was perhaps unavoidable. But on architectural grounds it is to be regretted. Nash's design was an interesting attempt to treat an important street as a connected whole; in that respect it is unique in London, and it is a pity that it should not have remained untouched.

Then came the return to brick architecture in a very different fashion; the formation of neighbourhoods of large and picturesque brick houses of the type which gives special character to Pont Street and Cadogan Place and Collingham Gardens; an architecture in many respects very effective, and most of it in good taste, many of the houses being the work of eminent architects, but perhaps somewhat deficient in

repose. It is the opposite extreme from the brick architecture of Bloomsbury.

And now we have a new architectural centre in formation about the new street lines of Aldwych and Kingsway, an architecture which, like that of Nash's Regent Street, is mainly that of shops and business buildings, not of residences. There is nearly a century between the two, and fully a century in architectural difference. Cement is quite at a discount now; brick is not good enough; everything in this last new quarter of London is of stone, and is a far more costly architecture than was thought possible, in the days of Regent Street, for any but public buildings of the first importance. But in a manner one is reminded of Regent Street, for the problem is a good deal the same. In the one case there is a quadrant leading up to a long line of straight street running north; in the other case there is a crescent with a long straight street running northward from the centre of it; the more dignified arrangement of the two. And there was in contemplation another point of similarity between this and Regent Street, for it was evidently intended at first that the crescent and the street should each form a comprehensive symmetrical design.

Architecturally speaking, it is a thousand pities that this intention was abandoned; in the circumstances it was perhaps unavoidable. But the abandonment was made too lightly, and without giving the subject sufficient consideration. Of course it may be said that the example of Regent Street shows how difficult it is to keep a general design complete under altered conditions of trade. It is easier to make a symmetrical design in a residential street than in a commercial one, because it can there be assumed that the houses are mostly for the same class of requirements, and the same class of tenants, and at all events it is easy to combine smaller and larger houses in groups which may architecturally alternate and contrast with each other, thereby giving variety along with symmetry; while in buildings for trade purposes one can never predict precisely what will be wanted by different tenants. Architectural unity in trade streets of the higher class has, however, been successfully adopted and maintained in Paris; and one cannot help thinking that what has been done in Paris could have been done in London, with a little more determination.

A certain harmony of style, however, does seem to be maintained so far in this new central architectural quarter of London. Classic types so far prevail, which is natural in a case where stone fronts appear to be *de rigueur*; and in fact we may probably conclude that the County Council authorities, though they have given up symmetrical design, would not sanction in either of these streets a front violently in contrast with those already erected, however good it might be in itself. The keynote seems to have been set by the first two buildings erected at the western extremity of Aldwych, the "Morning Post" offices and the Gaiety Theatre. The former was built, we believe, under rather rigorous municipal compulsion, and at a cost not altogether welcome to the proprietors. But considering the extremely prominent position of these two buildings in the approach to the new quarter

from Waterloo Bridge, the County Council were justified in demanding an important architectural treatment. Both buildings are bold and effective in general composition, though neither of them is altogether satisfactory or refined in detail. The block of offices immediately east of the Gaiety is, in refinement of detail, far superior to either of them, and is undoubtedly the best building yet erected in the crescent. It is to be hoped that the cupola feature on the Gaiety Theatre will be compelled to be repeated in a sufficiently similar manner at the east end of the island of buildings; the whole form and laying out of the building land requires that in order to justify and explain it. It was a great mistake architecturally that the Strand building line was not kept further northward to begin with, which would have left a fine place with St. Mary's Church in the centre of it, and St. Clement Danes at the eastern end, and would have avoided the method of junction with Fleet Street about which so much fuss has been made; but the western end of the block being already built the eastern end is bound to be carried out on lines symmetrical with it.

Of the new buildings in Kingsway, Mr. Belcher's Holy Trinity Church, which forms the subject of our principal illustration this week, is a remarkable and unusual example of Classic church architecture. The concave line of the lower portion of the façade may have been suggested by the façade of the memorial church in the Rue Jean Goujon at Paris; it at least recalls it. The tower is a good and picturesque attempt to give an expression of vertical and soaring character to an erection which, in accordance with the genius of classical architecture, must almost inevitably consist of separate storeys superposed, in contradistinction to the type of continuous tower which is available in Gothic architecture. The lofty proportions of the lower storey, and the gradual diminution in height of the two others, combine to produce a tower of pleasing and harmonious proportions; the only feature which we regret in it is the introduction of those unmeaning vertically hanging swags, as they may be called, depending from between the equally unmeaning projecting slabs of masonry. This is a detail which is merely a trick of the time, a kind of draughtsman's detail which seems to be inserted almost mechanically, and which an architect of Mr. Belcher's standing might have afforded to omit. It is, however, as a whole, a far superior façade to that of the other church in the new street, SS. Anselm and Cecilia, which is but a poor piece of design, although the interior has considerable merit and originality of treatment.

The business buildings, of which we publish some illustrations, show the kind of adherence to a similar type which renders them suitable for juxtaposition in the same street, as keeping up a certain prevalent character in the architecture. With one exception, Messrs. Gordon and Gunton's is the best and most coherent design; it is simply massed, and gains a good deal of dignity from the slightly projecting pavilions running the whole height of the building, and crowned by a curved pediment. Mr. Gibson's "Koh-i-noor House" has also the merit of simplicity and breadth of design, only we think the lofty arches in the ground storey, embracing two stories of floors (a feature which he has also employed in the elevation of Caxton House at Westminster) look rather too stilted as a base for a high building. Mr. Tanner's Craven House is less compact in design than these, and the varied shape and proportions of the openings in the ground floor, perhaps necessitated by the uses of the building, give it rather a broken-up and uncertain expression, though the whole building takes its place very well as part of the architecture of the street.

Mr. Lutyens's façade of Lincoln's Inn House must be classed apart from these. Though comparatively small and plain, this is a very unusual façade, showing a scholarly and thoughtful treatment of the materials of Classic architecture. The rusticated lower storey, with its Doric order and cornice, is admirably designed, and contrasts very happily with the

simpler treatment of the upper stories and the decorative pilasters and balustrade of the attic. This is a building in which every detail seems to have been carefully considered, and which must be regarded as something exceptional in modern street architecture. One would be glad to meet with more examples of the same refined character.

Site and Soil Troubles.

AT the annual general meeting of the Yorkshire Federation of Building Trades Employers, as reported on p. 680 of our issue of December 28th, attention was called to the judgment in the case of Boyd and Forrest v. The Glasgow and South-Western Railway Company. Although this case arose out of an engineering contract, it would appear, from the reference at the meeting in question, that the points involved are of equal importance to builders, and that therefore a brief summary of the case may be usefully placed on record in the Journal. It appears that Messrs. Boyd and Forrest, contractors, Kilmarnock, had sued the Glasgow and South-Western Railway Company for payment of £106,688 odd for work done in carrying out their contract for the construction of the Dalry and North Johnstone Railway, and the widening of the up-line between Dalry and Swinlees Junctions. Having contracted to do the work for £243,000, the firm found that in certain sections the material to be excavated turned out to be hard, whereas the schedules had led them to expect that it would be soft, and they sued for the extra cost entailed. Lord Johnston's opinion in the court of first instance was upheld. The Lord Justice-Clerk pointed out that, since the first advertisement of the contract appeared at the end of February, 1900, and the last on March 5th of that year, while tenders were required to be lodged on March 19th, it was obvious that the contractors were expected to rely on the information supplied by the railway company respecting the soils. His lordship thought it was proved that "many of the bores that the railway contractors put forward as information to intending contractors were not taken by competent borers, but by ordinary railway servants." There was a stringent clause in the contract debarring the contractors from redress in case of errors or discrepancies in the schedules; but this clause could not cover such misrepresentation as the case seemed to reveal, the information supplied by the borers differing in material particulars from that which was supplied to the contractors. This information turned out to be misleading to the contractors, and therefore vitiated the contract. That there was, on the part of the company or their agents no intention to cheat or injure the pursuers, Lord Ardwall declared, did not matter. Lord Dundas concurred, and the contractors were awarded the amount of their claim, with expenses. The case is doubtless of great importance so far as it goes; but the judgment should not be allowed to have the effect of lulling contractors into a sense of security which might in very slightly varying circumstances betray them into enormous loss. In the case under notice, the judgment obviously depended on the vitiation of the clause as to errors and discrepancies. In cases in which due care is taken to avoid such errors and discrepancies, the clause would probably hold good as against the contractor, who, generally speaking, is expected to take ordinary risks of this kind, and must therefore not expect to be indemnified for errors that in the nature of the case are unavoidable. Contractors should therefore insist on being given sufficient time in which to test the accuracy of the data upon which the contract is to be based, and on an equitable arrangement with respect to the cost of such verification. In builders' work, the difficulties usually arise with regard to sites and soils; and considering the numberless instances in which builders have suffered heavy loss and sometimes absolute ruin in consequence of unforeseen hindrances, as from springs, rocks, and treacherous strata, it would seem that they might profitably address them-

selves to the establishment of some more equitable provision against such contingencies. Granted that the client, like the builder, has not foreseen the treacherous character of the soil, why should the contractor be called upon to bear the whole burden of the unhappy and belated discovery, and even be further penalised because of the consequent delay for pumping, or shoring, or deeper excavation, or "rafting"? Setting aside legal refinements, the common sense of the matter would seem to be that the builder contracts to put a proper building on a proper site, and that a bad site should be the client's misfortune rather than the builder's. That this is not yet the authoritative view is because, to put the matter somewhat bluntly, the laws on the subject were conceived and framed before the builder had acquired the wholesome corrective influence with which organisation and publicity have but lately invested him; but that the interpretation of the law with regard to troublesome sites and soils is, generally speaking, extremely unsatisfactory from the contractor's point of view, and much too favourable to the client whose property is the fundamental cause of the mischief, is quite notorious.

The Burlington House Exhibition.

THE Royal Academy, instead of collecting an exhibition of "Old Masters," have varied the programme this year by an exhibition of the works of five deceased artists of the British School; namely, Orchardson, Frith, Macbeth, Swan, and David Farquharson; all of them painters belonging to a recent period. Such a collection is not equal in interest to an exhibition of Old Masters, and the five names make a rather curious combination. But there are a good many fine pictures on the walls, and the collection of a number of works by the same painter forms a good opportunity of judging of his merits and of the probable future position of his works.

One thing this exhibition leaves in no doubt; it is J. M. Swan, who is the most distinguished artist of the five. Orchardson's subjects, many of them, at least, are more important; Swan's subjects are mostly of very slight human interest, and he is least successful in his most serious subjects. "Orpheus" is mainly an animal picture, with a nude youth, whom we entirely decline to regard as a personification of Orpheus, capering among them; and "Dante and the Leopard," from the prologue to the "Divina Commedia," is a total failure as an illustration of that mystic poem; it is too realistic and matter-of-fact. Swan seems to have had no poetic conception, but he was emphatically an artist, with the true artist's power of handling slight subjects so as to give them beauty and significance, and one never realised this so fully as on seeing this roomful of his works. His exquisite little picture of the nude "Piping Fisher-boy" has that quality of completeness and inspiration in design and colour which makes it a possession for ever, a picture that it will always be a joy to look at, for future generations as well as at the present day. Such work as this is safe. The same exquisite painting is to be seen in "Nymphs Bathing," and "The Siren Ship," work to be valued for its artistic quality, not for its literary meaning; and this is what true art means. His animal pictures are quite apart from the ordinary class of animal painting. The two pictures of polar bears give the impression that the animal has been realised in painting for the first time; not the mere texture of its coat, but the essential nature of the animal; and the bronze of the "Puma and Macaw" is one of the most perfectly successful things that have ever been seen in the Academy sculpture room. In the Water-Colour room are a number of his studies of figures and animals.

Orchardson, as observed, painted more important subjects than Swan ever attempted, and it is in his most important pictures that he is at his best. "The Borgia," one of his most successful works, seems like a summing up of the refined wickedness of the Italian Renaissance, and it is really fine in

colour, and "The Young Duke" is a masterpiece of brilliant execution of detail, without losing breadth of effect. Orchardson had his own scheme of colour, too, which enabled him to give fine colour effect even to a portrait of a man in everyday dress, as in the half-length portrait of Mr. Henri Riviere. It must be felt, however, that a good many of his subject pictures here seem, in the artistic sense, rather commonplace after Swan's work; the literary element in them seems rather to overpower the artistic.

David Farquharson's fine night landscape, "Full Moon and Spring Tide," keeps its place completely, and strikes one as much as when it first drew everyone's attention on the walls of one of the annual exhibitions; and almost equally fine is his "Dartmoor," full of air and sunlight. These are examples of the real poetry of landscape painting, and one is glad to have an opportunity of seeing them again.

In comparison with such works, what is one to say of Macbeth and Frith? Macbeth is very largely represented not only by his paintings, but by a small roomful of his etchings (mostly from his own paintings), a branch of art which he handled with great success as far as execution went. But the collection together of a number of his paintings is an unfortunate experiment. It leaves on the mind no doubt that he is a painter who is done with. He pleased his generation more or less, in spite of his mannerism, but there is no life for the future in any of these things; they are paintings for the crowd, not for the artist. Frith, in one sense, has a better chance of remembrance, because some of his pictures, such as the "Railway Station," and the "Derby Day," may be called historical documents, careful representations of the manners and dress and general appearance of a generation which has passed. His large picture of "The Last Sunday of Charles II." is indeed a perfectly awful example of the kind of thing that used to be dignified by the name of "historical painting," but the "Railway Station," despite crude colour and utter vulgarity of style, is really an interesting and very faithful reproduction of the typical English crowd of the middle of the last century struggling for places in the train; and if the picture is examined in detail, it is surprising to find what a variety of carefully studied expression there is in the numerous faces portrayed; and in the figures of the two detectives there is a degree of real character beyond what Frith usually attained to. He seems to have been totally without any serious aim in art or the perception of anything higher than the merest commonplaces of life; but this subject was on a level with his intellect, and it is to his credit that in treating it he spared no trouble to make it, from his point of view, as complete as possible; and so the picture, in its own way, has a permanent value. There is a moral in this, perhaps, for painters of higher things. Careless painting does not last.

Public Works in Rome.

A LIST has been published of the public works effected by the State in Rome, since it became the capital of Italy, and of the sums expended on them. For work actually carried out by the State a sum of nearly £7,000,000 has been spent. To this must be added a little over £5,000,000 granted from time to time to the Roman municipality for improvements and embellishments in the city, making in all a total of about £12,000,000. The principal work carried out by the State has been the regulation of the Tiber, which up to the present date has cost, with bridges and embankments, a little over £4,000,000. This vast work is now nearly completed; only a small portion of the embankment remains unfinished, while the last new bridge, to be called the Victor Emanuel, will be opened at the beginning of next year, and has cost £1,280,000. The same sum, almost exactly, has been spent on the enormous monument raised to the memory of Victor Emanuel, which will be inaugurated in 1911. The great mass of this monument, with all its architectural ornament,

the Rome correspondent of the "Times" reports, has been finished, and many of the groups of statuary which adorn the approach will be in place before its inauguration. In the case of this monument, as in that of the new Chamber of Deputies, which should also be completed in 1911, at a cost of about £560,000, unexpected difficulties and consequent expense were found in laying the foundations. Another work, which has already cost but little short of £500,000, the carrying through of the Via Cavour to the Piazza Venezia, is very far from completion.

Wimbledon's New Theatre.

Mr. J. B. Mulholland's new theatre, in Merton Road, Wimbledon, which was opened on Boxing Day, is in Georgian Renaissance style, and the main feature is a tower, surmounted by a dome, above which is a balcony with columns and entablature, which in turn support a crystal ball with a winged figure above. The height of this figure is roof-top above the pavement. At night the ball is illuminated by the Mercury Vapour process, which throws out violet rays, and it may be seen for many miles round. The figure also is illuminated, and there are numerous arc lamps arranged round the building. Inside the theatre is shaped like a fan, the proscenium opening forming the handle end, and the width at the back of the pit being nearly double that at the front of the stalls. The house holds over 3,000. The decorations of the auditorium are also in a Georgian style, though not a pure example, Italian Renaissance having been incorporated. The main ceiling contains panels painted with allegorical groups. There are no boxes on the ground floor. The fronts of the boxes and of the tiers are of pierced and hammered brass with bronze enrichments. The circles are constructed on the cantilever system. Both the stage and the auditorium are heated equally, in order to prevent draughts. The lighting is by electricity from two sources. The plans have been drawn by Messrs. Cecil Masey and Roy Young to Mr. Mulholland's own designs.

THE ARCHITECTURAL PROFESSION IN REMOTE PROVINCIAL DISTRICTS.

By A. W. S. CROSS, M.A., V.P.R.I.B.A., and GEORGE HUBBARD,
F.S.A., F.R.I.B.A.

[In the case of signed articles it must of course be understood that we are not responsible for the personal opinions of the writers.]

IT has been said, with a considerable amount of truth, that one-half of the community does not know how the other half lives, and probably to no body of men is the saying more applicable than to the architectural profession. We do not know by whom, or by whose authority, the figures have been compiled, but the number of practising architects throughout the United Kingdom is usually estimated at about 6,000; and of these 6,000 architects, considerably more than a third of the number are unattached either to the Royal Institute of British Architects or to one of its allied societies, or the Society of Architects.

Thus cut off from active participation in the excellent work carried on both by the Institute itself and by the provincial societies in alliance with that body, or the Society of Architects, the architect in a remote country district exercises his avocation under conditions which are anything but conducive to his material welfare.

He is in all probability badly or imperfectly trained in the technique of his art, and his opportunities of improving his knowledge of design are strictly limited, inasmuch as works of great architectural importance are seldom, if ever, placed in his hands.

An architect of the type we are discussing rarely comes into personal contact with his fellow practitioners, and it is thus impossible for him to benefit by that frank discussion on

topics of professional interest which is often of the greatest value to the young or inexperienced man. The opportunity of substantially improving his position being thus denied to him, it is by no means a matter of surprise that the architectural products of a practitioner enjoying so few facilities for enabling him to make any real advance in his professional education should, often, be of an extremely indifferent nature. In addition, the professional standing of the country architect is becoming more and more insecure, through the ever-increasing competition of the architect of the "semi-tradesman" type. This gentleman's efforts to displace the legitimate practitioner often compel him to supplement his income from extraneous but more profitable sources, such as house and land agencies, valuations, etc. Thus the country architect is often compelled, against his personal inclination and predilection, to leave the narrow and rough paths of architecture, and to follow the wider and smoother high-roads of commercialism.

During the course of conversation with more than one country architect, the writers have been told how impossible it is for the country practitioner to live upon the proceeds of his purely architectural work, and they attribute this unfortunate circumstance to the great want of *esprit de corps* prevalent among the so-called "architects" of their district. A striking example of this absence of professional feeling was given in a recent case in which an employer was able, by the simple process of inviting competitive tenders from architects, to find one who was willing to prepare the working drawings and supervise the erection of a house costing £500 for a fee of thirty shillings! Country architects insist that in such circumstances there is an impelling force which causes them to take up extraneous work, and otherwise adopt practices which they frankly admit are not compatible with the profession of an architect. The gentleman who gave, in public, the information we have quoted, expressed his personal feeling of gratitude to the Institute for having at length seriously taken up the burning question of registration. The general feeling appeared to be that the deplorable want of unity among architects had ruined the art of architecture in this country, and very nearly ruined its practitioners.

During their tour of some twelve hundred miles, by road, the writers had every opportunity of observing the decadence in our domestic and civic architecture, which was constantly apparent.

Unfortunately, the work of the "specialist" seemed to be ubiquitous, and is discernible in almost all the towns and villages which were visited. It was not thus that the designers of the beautiful, unostentatious Georgian buildings, which, fortunately for the art of architecture, are still to be seen side by side with typical examples of the flaunting vulgarity of modern work, were wont to shirk their labour and responsibilities by delegating them to tradesmen and subordinates.

The depths to which modern architecture has sunk are fully proved by this clear evidence of the absence of the master controlling mind of the artist, exhibited in the internal finishings of many recent buildings, and their designers' lack of early training and want of artistic perception are no less indelibly stamped upon the general design of most of the modern structures to be seen in almost any town or village in the kingdom. But whilst no architect of to-day can justly aspire to take rank with the prominent English architects of the eighteenth century, yet increased educational facilities would do much to raise the artistic standard of modern work.

The profession can only be judged as a whole. Individualism is of small account in assessing its artistic standard of merit, and it is only by using registration as a means of instituting a definite and thorough course of practical tuition in the art and science of architecture that the æsthetic tone of the profession will be raised. For this and other reasons, the R.I.B.A. is to be congratulated upon having at length turned its attention to this important subject.

BABYLONIAN ARCHITECTURE.

In an interesting lecture on "The Architecture of Bible Lands," recently delivered by Dr. Theophilus G. Pinches, before the West End Jewish Literary Society, the lecturer, as reported in the "Jewish World," said that, notwithstanding the want of elegance in their great buildings, the Babylonians were born architects. Gudea of Lagas, who lived about 2,500 years before Christ, had at least two statues of himself carved in that character. On his knees rests a board bearing, in one case, a plan of either his capital or his palace, and in the other a rule marked with the scale used, and what is to all appearance the stilus with which the plans were made. If the plan on his knees be that of his palace, the design must have been changed in the course of its erection, for it did not greatly resemble the plan of the building found. It was to be noted that here, as in the case of the plans of the temples, there was the same necessity of passing through rooms to reach the apartment required. This, of course, implied a considerable want of privacy, which was realised by the late occupant of the palace, not on account of having to pass through the rooms, but because of some of the entrances from the courtyard being too exposed. He therefore had blocks of brick-masonry erected before two of the entrances, shapeless masses, it was true, but they served the purpose for which they were erected. Primitive as were Gudea's architectural notions, they were advanced and clever in the extreme compared with those of the builder of these massive screens. But in this palace again, the idea of power inherent in Babylonian and Assyrian buildings came out, as was exemplified by the fourfold brick columns of the buildings as originally erected. Apparently the structure had to support a great weight. But, notwithstanding its massiveness, the way in which the column was constructed was noteworthy, for special bricks were moulded wherewith to form it.

One of the great wonders of Babylon which their forefathers must have seen during the Captivity was the Hanging Gardens. These were said to have been built by Nebuchadnezzar to gratify his Median queen, who, tired of the monotonous Mesopotamian plain, desired something in the nature of the mountains of her native land. These were shown on a slab from Nineveh now in the British Museum. It showed trees growing on a terrace supported on pointed arches, and from the upper part streams of water flow down to water a well-wooded park. At the top, beside the arches, was a temple, with a monolith of a king at the left-hand side, and some little distance from the monolith an altar, with the usual decoration of gradines such as appear bordering the walls of fortified places, etc. As was well known, the Babylonian and Assyrian kings were often regarded as divine, and it was for this reason that offerings were made to them.

Of domestic architecture very little could be said; the middle classes, apparently, had no beautiful or even noteworthy houses, and the lower classes probably lived where they could. The picture of the street in Niffer, unearthed by the American excavations, was very instructive. It would be noticed that it was very narrow, but there was a well-formed gutter to carry off the rainwater down the middle. What the nature of the upper parts of these Babylonian houses were like was not known, but, in all probability, they were sometimes domed. Houses



THE LATE MR. HOWARD COLLS.

with these domed and strange tall conical roofs were said to be usual in the nearer East even now, and, as they knew, the people of Bagdad slept on the flat roofs of their houses in the summer time. The Assyro-Babylonians had not attained to such perfection in architecture as the European nations, but that would probably have come later. They had only to look at some of the sculptures, notably Assurbanipal's lion hunts, to see what they were capable of, and realise that they might have become great architects.

OBITUARY.

Mr. J. Howard Colls.

We deeply regret to announce the death (which took place on Thursday last at Buenos Aires) of Mr. John Howard Colls, the eminent builder and contractor. Mr. Colls, accompanied by his son-in-law, Mr. Nield, has taken a sea voyage for the benefit of his health, and died of heart failure two days before the date fixed for the return journey. He leaves a widow, one son and seven daughters. Mr. J. Howard Colls was a leading partner in the firm of Messrs. George Trollope and Sons and Colls and Sons, Ltd., and had constructed some of the largest and handsomest buildings in London. He was a past President of the National Federation of Building Trades Employers of Great Britain and Ireland, of the Institute of Builders, and of the London Master Builders' Association. His exertions in defending a case of "light and air"—Colls and Sons v. Home and Colonial Stores—which he carried to the House of Lords and won, and which now stands as an historic legal precedent, were so much appreciated by his colleagues in the Institute and Association that they presented him with his portrait in oils, by Mr. W. Q. Orchardson, R.A. He has been characterised as a man of the highest ability, of boundless energy, and extreme geniality.

M. Eugene Boverie.

The death, at the age of 40, has occurred of M. Eugène Boverie, the sculptor. M. Boverie first exhibited at the Salon in 1893, and among his works may be mentioned the well-known bronze statue of Camille Desmoulins, now in the gardens of the Palais Royal.

Mr. Uriah Cummings.

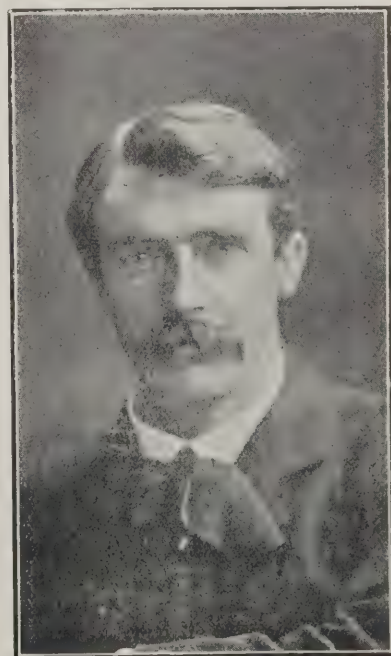
Mr. Uriah Cummings, who died at his home in Stamford, Connecticut, U.S.A., on November 11th, 1910, was prominently identified with the development of the natural cement industry of the United States, giving practical proofs of his firm faith in the material at a time when most people were sceptical upon the subject. He was president of the Cummings Cement Co., of Akron, and an authority on many matters relating to cement and concrete, having for many years had charge of the investigations conducted by the Government of the United States. He was a frequent contributor to the technical magazines and journals, and was the inventor of more than thirty successful mechanical devices. He was born at Akron, New York, in 1833.

Mr. Joseph Pratt.

The death occurred on December 23rd, after an operation, of Mr. Joseph B. Pratt, the mezzotint engraver. Mr. Pratt was born in London in January, 1854, the son of Anthony Pratt, who was also a mezzotint engraver. He was apprenticed in his 15th year to Mr. David Lucas, a noted mezzotint engraver. His best work in his prime was generally considered to have been the preparation of plates from the works of Landseer, Peter Graham, Rosa Bonheur, Briton Riviere, Paton, David Cox, and Heywood Hardy. In later years Mr. Pratt engraved from pictures by Gainsborough, Romney, Hoppner, Raeburn, and Sir Thomas Lawrence, invariably choosing subjects which had not been reproduced by the 18th century engravers.

Mr. Robert Mawson.

Particulars of the career of Mr. Robert Mawson were given in last week's Journal. We now present a portrait of the deceased gentleman, who was a brother of Mr. Thomas H. Mawson, Hon. A.R.I.B.A., much of whose architectural garden designing Mr. Robert Mawson had carried out; the brothers being in this way associated with many of the most beautiful and stately garden designs of modern times. Mr. Robert Mawson died at Windermere on December 15th, at the early age of forty-six.



THE LATE MR. ROBERT MAWSON.

NEW BUILDINGS IN KINGSWAY.

The Holborn-Strand improvement scheme represents London's most notable achievement in town planning. Although it was conceived on utilitarian lines, with, for its chief object, the establishment of through communication between north and south London, the obvious opportunity for dignified building has been by no means neglected. In the present article some of the chief buildings so far erected are illustrated and described.

AS Mr. G. W. Humphreys, M.Inst. C.E., observed in a recent paper read at a meeting of the Institution of Civil Engineers, the London County Council's Holborn-to-Strand improvement not only removed a great cause of congestion of traffic from east to west, but purged the insanitary areas that disgraced a large portion of central London. The scheme comprised also the very remarkable feature of a shallow tramway-subway, which, the first of its kind in England, effected a junction between the tramway systems north and south of the Thames—a connection which had previously seemed to be impossible, owing to the necessary intersection of main arteries of traffic.

The scheme in question, which may be described as the amalgamation of three distinct and separate endeavours, consists, as Mr. Humphreys pointed out, of, first, the widening of the Strand between Wellington Street and the Law Courts; secondly, the construction of a new main thoroughfare, 100 ft. wide and about 3,000 ft. long, from the Strand to Holborn, intersecting the numerous narrow and squalid streets formed in the past according to no recognised scheme of planning; and, thirdly, the widening of Southampton Row in continuation of the new street. There is, further, the construction under the new street of the shallow tramway-subway, and its continuation under the Strand and Wellington Street to the Victoria Embankment, thus enabling tramcars from the northern system to pass through the subway from its egress into Southampton Row near Theobald's Road to the Embankment, and thence, via Blackfriars or Westminster Bridge, on to the southern system.

The whole of the works, both of street- and subway-construction, were, with some slight exception, executed by the London County Council by the direct employment of labour through its late Works Department, of which Mr. Humphreys was chief, and to the designs of and under the general supervision of Mr. Maurice Fitzmaurice, the London County Council's Chief Engineer.

The formation of the new street calls for little comment, save for the fact that the work had to be spread over some time, and a great deal had to be carried out in crowded thoroughfares. In connection with the formation of the street, however, the electric-power, gas-, water-, and other mains and pipes had to be carefully preserved, with a view to their reception in the subways formed beneath the new thoroughfare, and the diversion of old and the construction of new sewers formed also an important part of the undertaking. It is noteworthy that during the progress of the work practically no interruption to vehicular traffic was caused, nor was diversion of traffic necessitated, particular care being taken to provide access for vehicular traffic on the main roadways affected by the improvement.

The main portion of the subway was constructed in "cut-and-cover," but the portions under Holborn and under the Strand and Wellington Street were constructed by means of a shield. The portion of the undertaking which called for the greatest care was the

subway under Wellington Street, a thoroughfare found to be constructed on brick arches, the piers of which had to be cut at varying angles to admit of the formation of the subway. The normal roofing of the subway is steel troughing, a bricked arched roof being substituted in the deeper portions; the walls are composed of Portland-cement concrete with an envelope of $\frac{3}{4}$ inch of mastic asphalt embedded in the concrete. A double line of tram-rails is laid in the subway, and two stations, the entrances to which are utilised also as street-refuges in Kingsway, afford means of access to the tramways.

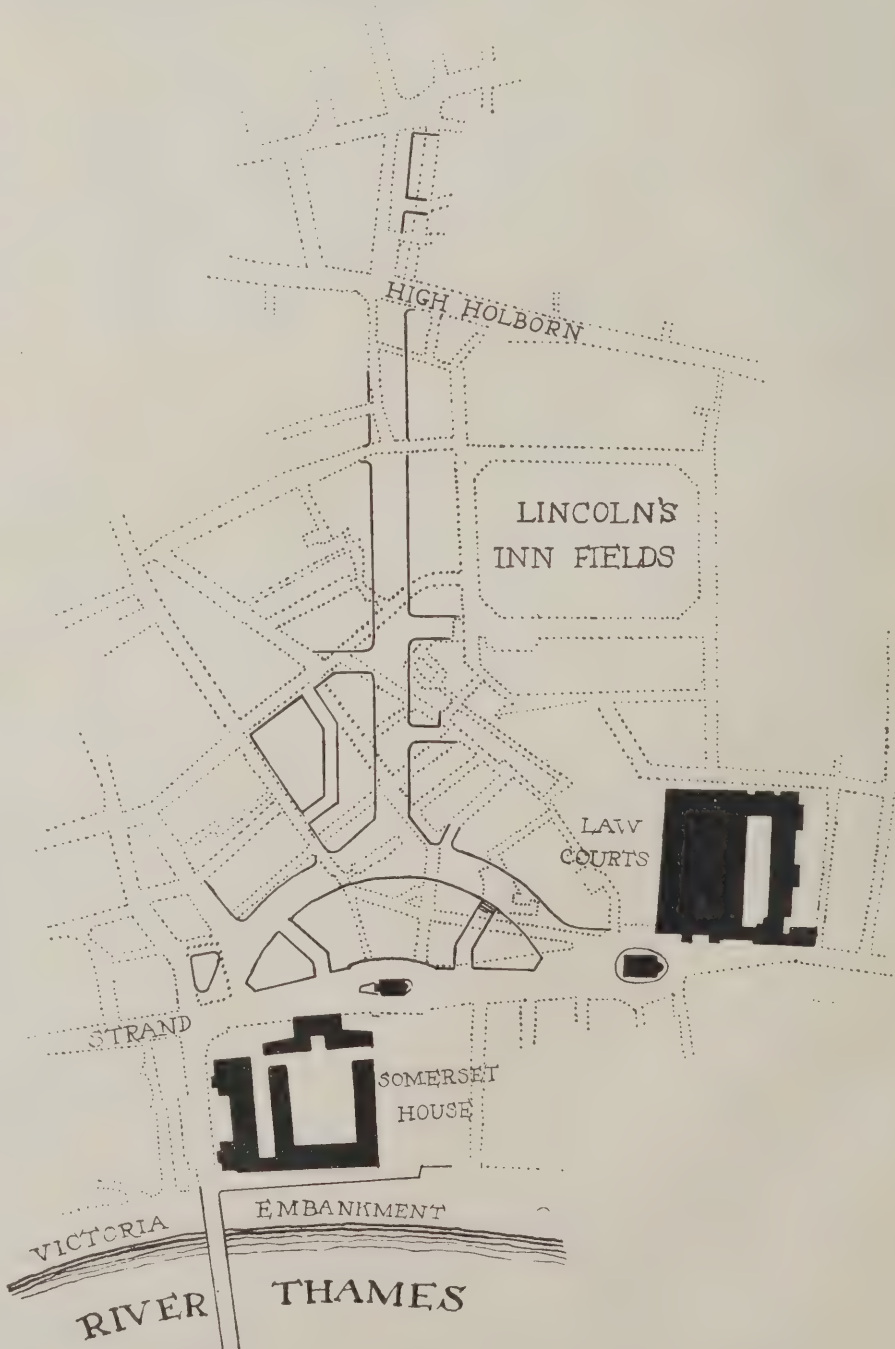
The magnitude of the undertaking may be judged by the fact that the gross cost is approximately £6,078,324, of which £385,041 was for works, which were

executed well within the limit of the estimates of the Council's officers.

Kingsway will, no doubt, soon be one of the show places of the metropolis—a wide street of handsome buildings, conspicuous among them being

Koh-i-Noor House,

the home of the Koh-i-Noor pencil and Waterman's Ideal fountain pen. The ground storey comprises a shop level and a mezzanine contained in six lofty openings or bays, with bold semicircular arches surmounted by a flat cornice running the width of the building; the wall spaces are rusticated in treatment. There are two entrances, one in Kemble Street for merchandise and the upper floors, through a rusticated doorway, and the other, the principal one, at the corner of the two streets. This latter entrance is a portico, flanked by two columns having plain shafts and capitals of modern composite detail. These shafts support an entablature bearing a balcony, having on its front face decorated scroll work exhibiting the name of the



PLAN SHOWING THE LAY-OUT OF KINGSWAY AND ALDWYCH.

house, carved, amid cherubs and artists' material, all in low relief.

In the recess above, reaching to the mezzanine cornice and supporting it at this point, are two marine figures—a mermaid and merman—surrounding the window opening. These figures and the decorative details are from the chisel of Mr. Gilbert Seale. The attic storey is varied with truss-shaped chimney stacks, and the whole building is surmounted by a high-pitched roof of concrete and steel, covered with grey slates, showing a row of dormer windows. The architectural features of the building culminate in a cupola immediately above the angle of the corner of the two streets, an elegant structure composed of four groups of engaged columns, supporting a dome partially gilt, each group, above frieze, terminating in an urn. The elevation of the building is further enriched with three metal railed balconies on the first floor level. The ground level will be used as a shop and stock rooms, and have been beautifully fitted up for this purpose in oak panelling, etc. The basements will be used for packing and despatching goods; the offices for the various departments of this extensive business, such as export, etc., are located in the floors above, where also the offices of the National Federation of Master Builders, the London Master Builders' Association, etc., are concentrated. Messrs. J. S. Gibson, Skipworth and Gordon, Old Bond Street, W., are the architects.

Holy Trinity Church.

Considerable progress has been made with the erection of the new Church of the Holy Trinity in Kingsway, of which the foundation stone was laid on October 27 by Lady Mary Glyn, and it is expected that the building will be completed in less than a year. The old church, which was built in 1831 and restored in 1887, had been rendered unsafe by certain excavations which had been made in the neighbourhood, and it was found necessary to demolish it. This is one of the few examples of church rebuilding in the centre of London in recent years. The City churches of London are generally of one type, having been, for the most part, re-erected by Sir Christopher Wren after the Great Fire. The new Church of the Holy Trinity will resemble Wren's buildings. The architect, Mr. John Belcher, R.A., has designed a tower, which will be in harmony with those of St. Mary-le-Strand and St. Clement Danes at the other end of Kingsway. The architect's drawing was exhibited in last year's Academy. Holy Trinity Church will have a recessed curved front facing into Kingsway. Here, at the east end, will be the main entrance, surrounded by the tower; the altar will be placed at the west end. The chancel will be octagonal in form, and will contain oak choir stalls, screen, and pulpit. The body of the church will be of reinforced concrete, but the front and tower will be faced with Portland stone. The main roof will



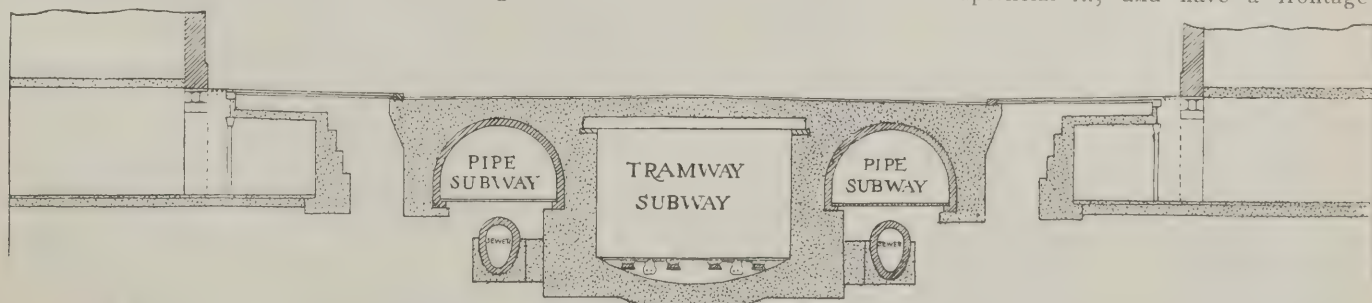
"KOH-I-NOOR HOUSE," KINGSWAY. GIBSON, SKIPWORTH AND GORDON, ARCHITECTS.

be semicircular in form, and so will the roofs of the north and south transepts. The roof and tower will be supported on fourteen piers of ferro-concrete, with brick walls between. The open tower will have three stages. There will be balconies in the two lower ones, and the upper one will be constructed for a peal of bells. The church will afford seating capacity for 750 people; its length will be 140 ft., and its width 75 ft. The height of the tower will be 200 ft. Beneath the church a large hall will be provided, and there will also be accommodation for a boys' club, with a recreation room and a miniature rifle range. The cost of the church is estimated

at £11,000, apart from the tower, which will entail a further expenditure of about £5,000.

The London Opera House.

The foundations of the new opera-house which is to be built at a cost of £150,000 in Kingsway, for Mr. Oscar Hammerstein, are now nearing completion, and it is expected that the building will be finished in less than a year. Mr. Bertie Crewe's design shows that the exterior has for its main feature a row of coupled pilasters of Greek Corinthian design, resting on a heavily rusticated base of Portland stone. The building will cover an area of 25,000 superficial ft., and have a frontage to



CROSS-SECTION SHOWING SUBWAYS UNDER KINGSWAY.



"LINCOLN'S INN HOUSE," KINGSWAY.
E. L. LUTYENS, F.R.I.B.A., ARCHITECT.

Kingsway of 260 ft. in length. At each end the sky-line will be broken by groups of statuary.

The interior of the Opera House will be decorated in the French Renaissance style. There will be no columns or stanchions to obstruct the view of the stage, as the cantilever system will be adopted. A tier of boxes will be suspended from beneath the circle, and above this will be one of the largest galleries in any London theatre. There will be a special entrance for Royalty in Kingsway, leading to the suite of retiring rooms reserved for the King. The stage is to be 90 ft. wide and 60 ft. deep. The Opera House is designed to accommodate over 3,000 people.

"Lincoln's Inn House."

This is another notable addition to Kingsway. It is on the eastern side of the thoroughfare. The façade is carried out in Portland stone, and exhibits the hand of a very cultured architect, Mr. E. L. Lutyens, F.R.I.B.A., who here combines the distinguishing qualities of some American buildings of this type with the individual character expressed with great skill in his many domestic buildings. The

building is intended for business purposes, and comprises a large room—for shop, bank, or other purposes—on the ground floor, a finely panelled large room above, and numerous suites of offices. Over the entrances are some delightful children's heads as keystones, very skillfully carved by Mr. Broadbent.

Another large new building on Kingsway is that nearly opposite "Lincoln's Inn House," and occupied largely by the International Correspondence Schools. It was designed by Messrs. Gordon and Gunton, F.R.I.B.A.

On the same side—the western side—is a tall building at the southern end of Kingsway, occupied by Messrs. W. H. Smith and Son; while at the northern end, next the new Trinity Church, is the block of business premises illustrated on page 14 of this issue, designed by Mr. Henry Tanner, junr.

On the curved arm of the new street, Aldwych, which leads right and left into the Strand, several new buildings have been erected, though, like Kingsway itself, the thoroughfare is far from complete. On the western side the new Gaiety Theatre and Restaurant (of which Messrs. Ernest Runtz and Ford and Mr. Norman Shaw were the joint architects) is faced by the new "Morning Post" offices (Messrs. Mewès and Davis, architects)

and the Waldorf Hotel (Messrs. A. Marshall Mackenzie, architects), flanked by the Aldwych and Strand Theatres (Mr. W. G. R. Sprague, architect); on the centre portion of the "island" site it is expected that the new Palace of French Arts and Industries will arise from the designs of M. Gerard; while on the eastern arm a fine new building is now being completed for an insurance company from designs by Messrs. J. J. Burnet, A.R.S.A., F.R.I.B.A., and Son.

Church of SS. Anselm and Cecilia.

This church takes the place of that which was long known as the Sardinian Chapel, Lincoln's Inn Fields, the latter having been acquired by the London County Council in connection with the formation of Kingsway. There was a tradition that the old church was designed by Inigo Jones, who did so much other work in the vicinity; but having been completely wrecked during the Gordon riots, and afterwards restored at the expense of the Government in apparently as cheap a way as possible, the building bore no trace of any architectural character that could be attributed to Inigo Jones. It was, however, the oldest post-Reformation Catholic Church place of worship in London, and existed under the protection of the Sardinian Ambassador until such help was no longer required.



DETAIL OF ENTRANCE TO "LINCOLN'S INN HOUSE," KINGSWAY.

The new church is designed in Early Renaissance style (as being most in accordance with its traditions), and consists of a nave and chancel with one wide aisle on the south side, the sacristies being beneath the chancel. The roofs are all of unvarnished pitch-pine, that to the nave being of barrel form, divided at each bay by large arched ribs resting on stone wall shafts with carved capitals. A lofty arch divides the nave from the chancel, the carved capitals being studied from those in the chapel built by Sir Thomas More at Chelsea church, while the arched stone rood-loft is on a small scale arranged somewhat in the manner of that in the

Blessed Virgin under a richly-carved canopy, having on either side figures of St. Anselm and St. Cecilia in niches with tall carved canopies. The whole is surmounted by a carved and moulded cornice from which is supported the back portion of the baldacchino, the front being supported from the ceiling. The altar rail and any furniture from the old church fit for removal were refixed in the new one, the old altar being placed at the end of the south aisle, and the font at the west end. A clergy-house for three priests has been erected at the rear of the church to take the place of the old one in Lincoln's Inn Fields.

PRESENTATION TO MR. JOHN SLATER, F.R.I.B.A.

The Council of the R.I.B.A., as an expression of personal regard for their former colleague, Mr. John Slater, and of appreciation of his many years' service as a member of their body, have presented him with a pair of handsome silver loving-cups. Mr. Slater has been a Fellow of the Institute for nearly thirty years, and was for twenty-five years a member of the Council. He retired from the latter position at the end of last Session, to the regret of his colleagues on the Council and of the very



BUSINESS PREMISES ON WEST SIDE OF KINGSWAY. GORDON AND GUNTON, F.R.I.B.A., ARCHITECTS.

church of St. Etienne du Mont, Paris. The chancel is paved with black and white marble, and the whole of the east end is filled by the high altar, with its reredos and carved and gilded baldacchino. The altar and retablo are detached from the wall, the former having a moulded black marble base with square carved pillars supporting the mensa in the style of those of Torregiano's altar in Henry VII.'s chapel in Westminster Abbey. The reredos is almost plain in the lower part, save for two panels carved with instruments of the Passion. Above, the central portion is occupied by a sculptured group of the Coronation of the

The church seats about 500 persons, and, together with altar, etc., and the clergy-residence at the rear, has cost about £12,500. Externally it is faced with Portland stone, while internally Bath stone has been freely used. Mr. Frederick A. Walters, F.S.A., of Old Queen Street, Westminster, was the architect, and Messrs. James Smith and Sons, Ltd., of South Norwood, were the contractors. The altar and reredos, with all other carving, were carried out by Messrs. Earp and Hobbs, of Lambeth. The metal casements and leaded glazing were executed by Messrs. R. E. Pearse and Co., Ltd., of Upper Kennington Lane, London.

large number of outside members to whom his invaluable services to the Institute in various capacities had been known and appreciated.

Mr. Slater has taken part in practically all the numerous activities of the Institute since he first joined as Associate in 1879. He has served on most of its committees: the Science Committee, the old Library Management Committee, the Light and Air Committee, the Competitions Committee, the Board of Professional Defence, the Prizes and Studentships Committee, the Finance Committee, of which he was for many years chairman,

and various special committees. His knowledge and experience have always been at the service of the Council in the settlement of questions from time to time referred to them.

In a paper on "Building Legislation," read before the Institute some years before the London County Council took the matter in hand, he advocated the codification of the various Buildings Acts relating to London, and the passing of a measure which should lead to better building both from a constructional and a sanitary point of view. Many of his proposals found place in the subsequent Act of 1894. For several years he has been a member of the Tribunal of Appeal under the London Building Act, holding the appointment from the Council of the Institute. Mr. Slater, with the late Mr. Arthur Cates, has had a large share in the initiation and carrying forward of the educational work of the Institute, notably the scheme of progressive examinations. He was a member of the old Board of Examiners from the year 1882 until its supersession in the past year by the present Board of Architectural Education, serving for many years as vice-chairman and afterwards as chairman, and rarely missing a meeting. When the Board of Architectural Education was initiated in 1904 he acted as joint Hon. Secretary, with Professor Reginald Blomfield, A.R.A., and helped to draw up the scheme of education which has since been adopted in the principal institutions of architectural training throughout the country.

Mr. Slater still retains his position on the Board, and at the last examination was to be seen, as for so many years past, taking his turn in presiding at the *viva voce* examination of candidates. Mr. Slater represented the Institute on the Lightning Research Committee (1901-1905), and acted as its chairman during the five years of a peculiarly difficult and laborious investigation. His linguistic attainments have often served the Institute in good stead, especially in the entertainment of foreign guests and as representative of the Institute on Congresses abroad. He is one of the Institute's best speakers, and few members are more regular in attendance at the general meetings of the Institute.

NOTES FROM DUBLIN.

Sir Joseph Downes, J.P., T.C., merchant baker, Nos. 5 and 6, North Earl Street, having purchased the premises adjoining his own shops, is about to spend between four and five thousand pounds on re-building. The architect is Mr. Geo. T. Moore, M.Inst.C.E.I., 1 and 2, Foster Place, and the quantities are being taken out by Mr. James Mackey, J.P., surveyor, of 58, Dame Street.

A new Roman Catholic college for the Jesuit fathers, for students in connection with the national university, is proposed to be built in Hatch Street. The cost of the shell of the building will be some £16,000. Mr. Francis Bergin, B.E., Westmoreland Street, has prepared one set of designs, and the quantities were taken out by Mr. Mackey, surveyor. Mr. Chas. B. Powell, Rathmines, has got out another set of drawings, the quantities for which were issued by Messrs. Mumby and O'Rourke, surveyors, College Green.

Messrs. Manfield and Sons, boot and shoe manufacturers, Sackville Street, have taken over the large corner premises, 44, Sackville Street and Abbey Street, and will immediately proceed with re-building and structural improvements.

P. T.

NEWS ITEMS.

Church of St. John the Baptist, Holland Road, Kensington.

Messrs. E. A. Roome and Co., of 36, Basinghall Street, E.C., were the builders of the additions to this church referred to on page 666 of our issue for December 28th.

* * *

A Tinworth Exhibition.

A series of sketches in terra-cotta and other examples of the work of Mr. George Tinworth, sculptor, will be on exhibition in the Cuming Museum, at the Southwark Central Library, Walworth Road, S.E., for a few weeks. Admission is free.

* * *

Notice of Removal.

The offices of Mr. Charles R. Price (late S. J. Scott), builder and contractor, have been removed from 139, Bishopsgate Street Without to 87, Bishopsgate, E.C. Additional premises have been taken in Bishopsgate Avenue to increase the facility for dealing with the City work. Telegraphic address and telephone numbers remain as before. (Telephone: Head Office, 2565 London Wall; Works, 224 Dalston. Telegrams, Priconia, London.)

* * *

The Buried City of Meroe.

Mr. J. Garstang has recommenced excavations at the buried city of Meroe on the Nile. He has discovered a palace, a bath room in perfect preservation, the walls of an acropolis, quays, and a harbour. A bronze head with inlaid eyes, larger than life—an excellent piece of Greek art—was also unearthed.

* * *

The Architectural Association.

There seems to have been some curiosity as to what was intended by the title of Mr. Statham's paper to be read at the meeting on the 9th, "Architecture as plan and section." The meaning will perhaps be clearer by the title under which the paper will actually be given—"Architecture considered as plan and section," i.e., in its general conception, apart from any question of details of style. The main object of the paper is to suggest a way of escape from "The battle of the styles."

* * *

Builders' Clerks' Benevolent Institution.

A special general meeting for the election of three pensioners was held on Tuesday, 20th December last, William Downs, Esq., President, in the chair. At the declaration of the poll the result was as follows:—Mr. Soper, 914 votes; Mrs. Thompson, 761 votes; Mr. Stratton, 723 votes; Mrs. Hawkins, 567 votes.

The three highest on the list were duly elected. Mrs. Hawkins, widow, was receiving half her late husband's pension, and she having been unsuccessful at three elections, it was proposed and unanimously agreed that the full pension of a widow should be granted her, the Committee feeling that the donors and subscribers would endorse their action, the additional cost to the funds of the Institution being £9 per annum.

* * *

New Cure for Damp Walls.

A new method of drying humid walls, devised by a Belgian architect, M. Knapen, consists in embedding inclined porous tubes in the walls, the direction of the tubes in plan being perpendicular to the wall surfaces. By capillary action these tubes continually absorb the moisture from the wall, for the air which they contain, being in the same hygrometric

condition as that of the interior of the building, is relatively dry, and readily takes up moisture. The act of vaporisation ensuing therefrom reduces the temperature of the air passing from the tube and being constantly replaced by drier and warmer air. The tubes are placed sufficiently close together to leave no intervals between their zones of influence. In new buildings the places for the tubes are left, but the tubes themselves are not inserted until the mortar has set. It is stated that the method has been tried at Versailles.

COMPETITIONS

Ruislip Manor.

Premiums of £150, £100, and £50 were offered to architects and surveyors for the laying out of the Ruislip Manor Estate; the author of the first premiated design to be appointed to supervise the carrying out of the work as architect to the promoting company, on terms agreed by the R.A.B.A. Sixty-two designs were submitted to the assessors, Sir Aston Webb, C.B., R.A., and Mr. Raymond Unwin, F.R.I.B.A., whose award is now announced, as follows: 1, A. and J. Soutar, 37, Westover Road, Wandsworth, S.W.; 2, George Hornblower, 2, Devonshire Terrace, W.; 3, H. R. Gardner, Reigate Road, Leatherhead. The successful competitors have had exceptional experience in this branch of their profession, having been engaged for the past ten years under Mr. W. E. Kiley, F.R.I.B.A., on the development of the various large housing estates of the London County Council. They have also won three first premiums in three similar competitions. Further particulars are reserved for next week's issue.

LIST OF COMPETITIONS OPEN.

JAN. 21. SCHOOL FOR TAUNTON.—The Education Committee of the Borough of Taunton invite architects practising in that borough to submit designs for a provided school for 440 children. No premium is offered, but the author of the selected design may carry out the work at the commission of 5 per cent. Address George H. Kite, Town Clerk, Municipal Buildings, Taunton.

JAN. 31. GLASGOW PUBLIC LIBRARY.—The Corporation invite from architects competitive plans of a branch library proposed to be erected at the corner of Saracen Street and Allander Street, Possilpark. Premiums of £50, £30, and £25 respectively will be awarded to the authors of the designs adjudicated first, second, and third in order of merit. Designs must be lodged on or before Tuesday, January 31. Particulars from A. W. Myles, Town Clerk, City Chambers, Glasgow.

FEB. 1. DUBLIN. NEW PAVILION, ROYAL HOSPITAL FOR INCURABLES AT DONNYBROOK.—Particulars in our issue for October 12.

MARCH 1. MUNICIPAL OFFICES, COVENTRY.—This competition is open to all architects, and the assessor is Mr. E. Guy Dawber. Particulars (on receipt of two guineas) from Geo. Sutton, Town Clerk, 10, Hay Lane, Coventry. See our issue for November 23.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 26.

JUNE 10. SEWERAGE SCHEME, ASPATRIA, CUMBERLAND, U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

LOCAL GOVERNMENT BOARD REPORT.

The second part of the Report of the Local Government Board (Cd. 5275), which was issued on December 21st, deals with the administration of county, municipal, district, and parish councils, with the public health, local taxation, and valuation. The first part, which relates to the administration of the Poor Laws, the Unemployed Workmen Act, 1905, and the Old-Age Pensions Act, 1908, was issued three months ago.

Maintenance of Roads.

Next to elementary education, the largest separate item in the accounts of county councils other than the London County Council in 1908-9 was in respect of main roads. The sum directly or indirectly paid by county councils in respect of 27,749 miles of such roads amounted to £2,739,591. The expenditure on roads other than main roads included £2,160,492 spent by rural district councils on maintenance and repairs, and £52,067 spent on improvements. In addition £16,085 was spent out of borrowed moneys on roads of the same class. The total length of these roads was 95,144 miles. A feature of administrative importance to which attention is drawn in the report is the Development and Road Improvement Act, 1909, under which the Road Board constituted under the Act is empowered, with the approval of the Treasury, to make advances by way of

grant or loan to county councils and other highway authorities in respect of the construction of new roads or the improvement of existing roads, and to construct and maintain new roads. Any new road constructed by the Road Board will be a public highway, but it will be maintained by and at the cost of the Road Board. For this purpose a Parliamentary grant will be available. It may be assumed from the foregoing that there will in the near future be a considerable further increase in the cost of maintaining, repairing, and improving the main roads of the country. Probably this increase will be put down to the development of motor traffic in this country.

Loans to Urban and Rural District Councils.

During the year 1909 loans to the amount of £6,252,889 were sanctioned by the Board on the application of urban and rural district councils. Urban councils are responsible for £5,700,432 of that sum, £2,100,119 being for sewerage and sewage disposal; £1,257,457 for street improvements, making up private streets and construction of new streets and bridges; whilst £464,877 was sanctioned on account of waterworks in urban districts.

Housing.

Important advances have been made during the year towards the provision of improved housing for the working classes and for others. The Housing, Town Planning, etc., Act., 1909, is not, like its predecessors, limited mainly to the wants of the labouring or even the working

class population. The early Acts dealing with the subject were known as the Artisans and Labourers' Dwellings Acts. They were replaced by the Housing of the Working Classes Acts. Now we have reached a third stage, in which local authorities are empowered to provide and supervise houses of a better class than under the former enactments, and to regulate more effectually the planning of all classes of dwelling-houses in urban areas. "The object of the town-planning part of the Act is to ensure, by means of schemes which may be prepared either by local authorities or landowners, that, in future, land in the vicinity of towns shall be developed in such a way as to secure proper sanitary conditions, amenity, and convenience in connection with the laying out of the land itself and of any neighbouring land."

It is a noticeable feature of the new Act, and one to which the report draws special attention, that it applies, to houses of much higher rental, those provisions of the Act of 1890 which imply a condition in the contract for letting that the house is fit for habitation, and includes in the implication a condition that during the tenancy the landlord shall keep the house in a state reasonably fit for habitation. The passing of the new Act has greatly increased the work of the Department.

Water Supply of London.

The report contains the usual particulars relating to the water supply of London. Year by year the amount of water consumed in the area supplied by the Metropolitan Water Board shows a considerable increase. In the year 1909 the average number of people supplied was 7,064,013, or about 30,000 more than in 1908. The total average daily supply in 1908 and 1909 respectively was 223,777,747 and 226,481,907 gallons, the average daily consumption per head being 31.98 gallons per head in 1908 and 32.06 gallons per head in 1909.

The water is obtained from the rivers Thames and Lea, from gravel beds in the Thames valley, from springs in the Lea valley, and from 52 wells. The reports of the Board have for many years past drawn attention to the necessity of providing additional storage accommodation for water supply purposes, and it is satisfactory to learn that great progress has been and is being made in this direction.

During the year 1909 no fewer than 13,888 samples of water were examined in the Water Board's laboratories, mostly by bacteriological methods. The results are briefly summarised in the appendix to the report under review, which also gives an interesting résumé of Dr. Houston's report to the Water Board on his experiments to determine the effect of storage on the life of cholera germs artificially introduced into samples of various kinds of water. In the Board's report for 1908 similar information was supplied as to the effect of storage on typhoid germs. The result is said to form another link in the chain of evidence which Dr. Houston has sought to establish, namely, "That by adequately storing the raw impure river waters which constitute the chief sources of London's water supply, antecedent to their filtration, safety of the metropolis as regards water-borne epidemic disease (apart from the possibility of accidental infection of the works, or subsequently in the pipes) is almost, if not quite, assured." The loans sanctioned on the application of the Metropolitan Water Board during the year 1909 amounted to £69,961, as compared with £722,393 sanctioned in the previous year.



CHURCH OF SS. ANSELM AND CECILIA, KINGSWAY, LONDON: VIEW LOOKING EAST, TOWARDS ALTAR AND REREDOS.

R.I.B.A. : NEW REGULATIONS FOR COMPETITIONS.

The R.I.B.A. Regulations for Architectural Competitions, revised and amended in accordance with the resolutions passed by the general body at the meeting of the 21st November, have now been issued as an Institute paper and the old regulations withdrawn.

The new regulations are as follows :—

It is assumed that the object of the promoters is to obtain the best design for the purpose in view. This object may best be secured by conducting all Competitions upon the lines laid down in the following regulations, which have been framed with a view to securing the best results to the promoters with scrupulous fairness to the competitors.

and that the drawings have been prepared under his or their own supervision. A successful competitor must be prepared to satisfy the assessor that he is the bona-fide author of the design he has submitted.

- (D) The premiums shall be paid in accordance with the assessor's award, and the author of the design placed first by the assessor shall be employed to carry out the work, unless the assessor shall be satisfied that there is some valid objection to such employment, in which case the author of the design placed next in order of merit shall be employed, subject to a similar condition. The award of the assessor shall not be set aside for any other reason.
- (E) If no instructions are given to the author of the design selected by the assessor to proceed within twelve months

made with the greatest possible care, as the successful result of the competition will depend very largely upon his experience and ability.

The President of the Royal Institute of British Architects is always prepared to act as honorary adviser to promoters in their appointment of assessors.

2.—The duties of an assessor are as follows :—

- (a) To confer with and advise the promoters on their requirements and on the questions of cost and premiums to be offered.
- (b) To draw up instructions for the guidance of competitors and for the conduct of the competition, incorporating the whole of the clauses of these regulations which are applicable to the particular competition.



CRAVEN HOUSE, KINGSWAY, LONDON. H. TANNER, JUNR., F.R.I.B.A., ARCHITECT.

Members of the Royal Institute of British Architects and Allied Societies do not compete excepting under conditions based on these regulations.

The conditions of a competition shall contain the following regulations (A) to (F) as essential :—

- (A) There shall be appointed for every competition one or more fully qualified professional assessors, to whom the whole of the designs shall be submitted.
- (B) No promoter of a competition, and no assessor engaged upon it, nor any employee of either, shall compete, or assist a competitor, or act as Architect, or joint architect, for the proposed work.
- (C) Each design shall be accompanied by a declaration, signed by the competitor, or joint competitors, stating that the design is his or their own personal work,

from the date of the award, then he shall receive payment for his services in connection with the preparation of the competition drawings of a sum equal to $1\frac{1}{4}$ per cent. on the amount of the estimated cost. If the work is subsequently proceeded with, the $1\frac{1}{4}$ per cent. previously paid to him shall form part of his ultimate commission.

- (F) The selected architect shall be paid in accordance with the schedule of charges sanctioned and published by the Royal Institute of British Architects.

1.—The promoters of an intended competition should, as their first step, appoint one or more professional assessors, architects of established reputation, whose appointment should be published in the original advertisements and instructions. The selection of an assessor should be

Note.—It is essential in drawing up the instructions to state definitely which of the conditions must be strictly adhered to, under penalty of disqualification from the competition, and which of them are optional.

- (c) To answer queries raised by competitors within a limited time during the preparation of the designs, such answers to be sent to all competitors.
- (d) To examine all the designs submitted by competitors, and to determine whether they conform to the conditions and to exclude any which do not.
- (e) To report to the promoters on the designs not so excluded and to award the premiums in strict adherence to the conditions.

3.—Competitions may be conducted in one of the following ways:—

(a) By advertisement, inviting architects willing to compete for the intended work to send in designs. For competitions for public works of great architectural importance this method is recommended.

(b) By advertisement, inviting architects willing to compete for the intended work to send in their names by a given day, with such other information as they may think likely to advance their claims to be admitted to the competition. From these names the promoters, with the advice of the assessor, shall select a limited number to compete, and each competitor thus selected shall receive a specified sum for the preparation of his design.

(c) By personal invitation to a limited number of selected architects to join in a competition for the intended work. Each competitor shall receive a specified sum for the preparation of his design.

Note.—Where a deposit is required for supplying the instructions it shall be returned on the receipt of a bona-fide design, or if the applicant declines to compete and returns the said instructions within a month after the receipt of replies to competitors' questions.

4.—The number, scale, and method of finishing of the required drawings shall be distinctly set forth. The drawings shall not be more in number, nor to a larger scale than necessary to clearly explain the design, and such drawings shall be uniform in size, number, mode of colouring and mounting. As a general rule a scale of 16ft. to 1in. will be found sufficient for plans, sections, and elevations, or in the case of very large buildings a smaller scale might suffice.

Unless the assessor advises that perspective drawings are desirable, they shall not be admitted.

5.—No design shall bear any motto or distinguishing mark; but all designs shall be numbered by the promoters in order of receipt.

6.—A design shall be excluded from a competition—

(a) If sent in after the period named (accidents in transit excepted);

(b) If it does not give substantially the accommodation asked for;

(c) If it exceeds the limits of site as shown on the plan issued by the promoters, the figured dimensions on which shall be adhered to;

(d) If the assessor shall determine that its probable cost will exceed by 10 per cent. the outlay stated in the instructions, or the estimate of the competitor, should no outlay be stated. If the assessor be of opinion that the outlay stated in the instructions is inadequate, he shall not be bound in the selection of a design by the amount named in such instructions, but the question of cost shall nevertheless be a material element in the consideration of the award;

(e) If any of the conditions or instructions other than those of a suggestive character are violated;

(f) If a competitor shall disclose his identity or attempt to influence the decision.

7.—All designs and reports submitted in a competition for a public building, except any excluded under Clause 6, shall be publicly exhibited after the award has been made, which award shall be published at the time of exhibition; and all designs

and reports submitted in a competition for a private building shall be similarly exhibited to the competitors.

8.—All drawings submitted in a competition, except those of the design selected to be carried out, shall be returned to the competitors.

The usual R.I.B.A. scale of charges for assessing competitions, whether by jury or otherwise, is the sum of thirty guineas, plus one-fifth per cent. upon the estimated cost of the proposed building.

The regulations are not intended to apply to small, limited private competitions.

THE R.I.B.A. NOVEMBER EXAMINATIONS.

The Preliminary.

The Preliminary Examination, qualifying for registration as Probationer R.I.B.A., was held in London and the provincial centres mentioned below on the 14 and 15 November. Of the 125 candidates admitted, claims for exemption from sitting were allowed to the number of thirty, and the remaining ninety-five candidates were examined with the following results:—

Centre.	Total Exam'd.	Passed.	Relegated.
London	41	26	15
Birmingham	5	5	0
Bristol	8	4	4
Cardiff	6	4	2
Leeds	9	7	2
Manchester	22	9	13
Newcastle	4	4	0
	95	59	36

The Intermediate.

The Intermediate Examination, qualifying for candidature as Student R.I.B.A., was held in London and the under-mentioned provincial centres on the 14th, 15th, 17th, and 18th November, when 107 candidates were examined, with the following results:—

Centre.	Total Exam'd.	Passed.	Relegated.
London	72	34	38
Bristol	5	1	4
Cardiff	3	1	2
Leeds	7	4	3
Manchester	18	5	13
Newcastle	2	1	1
	107	46	61

The Final and Special.

The Final and Special Examinations were held in London from the 24th November to the 2nd December. Of the 122 candidates examined, 54 passed, and 68 were relegated in various subjects. The following are the names of the passed candidates, the † prefixed to a name signifying that the candidate entered for the Special Examination, which is designed for architects in practice and chief assistants exempted by the Council from the Preliminary and Intermediate Examinations and from submitting Testimonies of Study:—

(The initial s.=student.)

Adam, Alexander (s. 1907), Paisley; Arnott, Charles Dudley (s. 1906), Gorleston-on-Sea; Barnish, Leonard (s. 1903), Blundellsands; Beswick, William (s. 1908), Chester; Birkett, Stanley (s. 1905), West Didsbury, Manchester; Bunce, Henry Edgar (s. 1908), London, N.E.; Butt, Charles Frederick (s. 1908), London, W.; Carter, George Ralph (s. 1908), Leicester; Chaundler, James Hubert (s. 1905), London, S.W.; Cloux, Frank Louis Whitmarsh (s. 1906), Brixton, S.W.; Coates, William Victor (s. 1908), Grimsby; Coqk-

rill, Kenneth Arthur (s. 1908), Gorleston; †Collins, Alfred Francis (special), Windsor; †Coombs, Leslie Douglas (special), Bowling Street, Dunedin, New Zealand; Cranford, William Harold (s. 1907), Finsbury Park, N.; Davis, Philip Wolf (s. 1907), London, W.; †Drysdale, George (special), Strand, W.C.; Evans, Thomas Glynne (s. 1908), Liverpool; †Glanfield, Ernest Budge (special), Bond Street, W.; Hall, Edwin Stanley (s. 1907), Bedford Square, W.C.; †Hathaway, Percy William (special), Rochdale; Hett, Leonard Keir (s. 1909), Hampstead, N.W.; Higgins, William Thomas (s. 1906), Stony Stratford, Bucks; Hodges, Claude Vivian (s. 1905), Leicester; Hughes, Thomas Harold (s. 1909), Aberdeen; Hulbert, Francis Seymour (s. 1909), London, S.W.; Jones, Cyril Montagu (s. 1906), London, W.C.; Kipps, Percy Kingsford (s. 1906), Lewisham, S.E.; Lodge, Thomas Arthur (s. 1909), Thames Ditton, Surrey; Lyon, Maurice (s. 1907), Edenbridge, Kent; Mansfield, Leslie (s. 1908), Bickley, Kent; Martin, John Gray (s. 1906), Oldham; Matheson, Kenneth William (s. 1904), Clapton, N.E.; Matthews, Bernard Frank (s. 1909), Stockwell, S.W.; Moore, Ernest Josiah Edwards (s. 1906), Newport, N.W.; Munt, Francis Edwin Spencer (s. 1906), Balham, S.W.; †Peascod, Joseph (special), London, E.; Pywell, William Jackson (s. 1907), Brighton; Robertson, Norris Bathgate (s. 1908), Leicester; Schofield, John Frank (s. 1905), London, E.; Shanks, Norman Fraser (s. 1907), Old Trafford, Manchester; Slater, John Alan (s. 1908), London, N.W.; Smith, Frank William (s. 1908), Newark-on-Trent; Sutton, Cecil Alfred Leonard (s. 1909), Nottingham; Tanner, Edwin John (s. 1909), London, W.; †Thompson, Charles William Ward (special), Chatham; †Tugwell, Sydney (special), Bournemouth; Walker, Marshall Eyre (s. 1907), Woking; Welch, Herbert Arthur (s. 1907), Hendon, N.W.; †Wellburn, George Taylor (special), Redcar, Yorks; Wheatley, Joseph Horace Lynchem (s. 1906), Petersfield; Wilson, Herbert John (s. 1905), Accrington; Winch, Arthur (s. 1909), Leeds; Wright, Edward Leslie (s. 1906), Cardiff.

The following table shows the number of failures among the relegated candidates in each subject of the Final Examination:—

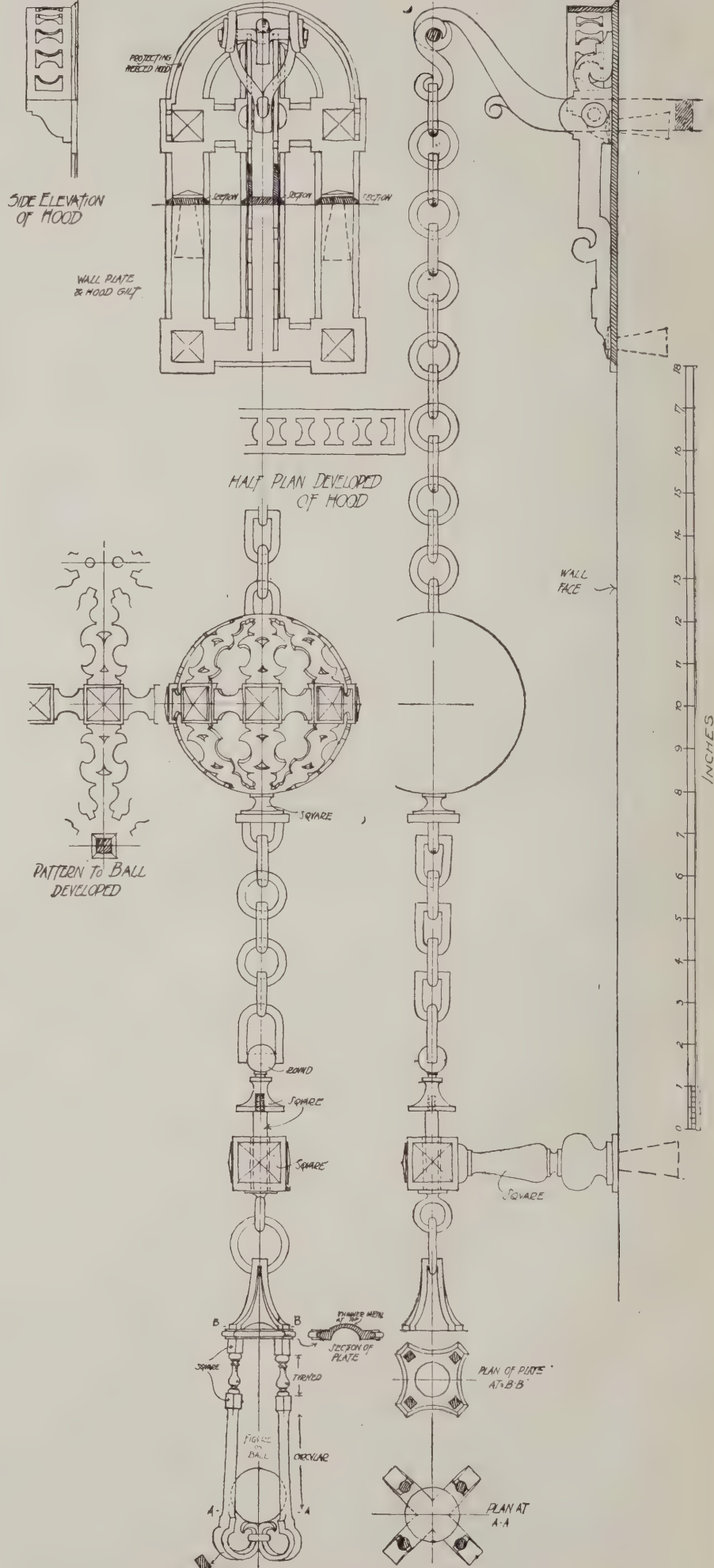
I. Design	46
II. The Principles of Architecture	43
III. Building Materials	9
IV. Principles of Hygiene	27
V. Specifications	14
VI. Construction: Foundations, etc.	36
VII. Construction: Iron and Steel, etc.	39

Street Lighting in Liverpool.

The success of the experimental system of automatic street lighting in Liverpool has led to its extension, and its use promises to become universal in that city. It was feared that owing to the varying temperature and the heavy street traffic the number of stoppages of the controllers would be very great, but these fears have not been realised, the failures amounting to 16 per month out of a total of 272. The cost of maintenance of the lamps should be reduced under this system, as the use of the controller abolishes the shock to the lamps due to the turning on and off of the taps, the opening and closing of the spring lighting door, and the mechanism of the anti-vibratory arrangement.

LONGSTOWE HALL

DETAIL OF ELECTRIC BELL-PULL



This bell-pull at Longstowe Hall, Cambridgeshire, is of "armour-bright" iron, with a small bronze figure of "Charity" on the ball within the handle.
JOHN W. SIMPSON, F.R.I.B.A., AND MAXWELL AYRTON, A.R.I.B.A., ARCHITECTS.

CONCRETE AND STEEL SECTION

(MONTHLY.)

L.C.C. DRAFT REGULATIONS FOR REINFORCED CONCRETE CONSTRUCTION.

The Council of the Royal Institute of British Architects having received a request from the London County Council to consider and report on their Draft Regulations for Reinforced Concrete Construction, formed the opinion that it would be most desirable to discuss the question of these draft regulations with representatives of the various bodies chiefly concerned with the subject to whom the London County Council had sent copies and requests for reports. The Council accordingly invited these bodies to join in a conference to discuss the matter, and the following representatives were appointed:—

Edwin T. Hall, V.-P. R.I.B.A., Chairman,	Royal Institute of British Architects.
Wm. Dunn (F.)	
H. D. Searles-Wood (F.), Hon. Sec.	Institute of Builders.
F. Higgs	
G. B. Godson	London Master Builders' Association.
Thomas Holloway	
William King	Concrete Insti- tute.
Frank May, J.P.	
Charles Marsh	Surveyors' In- stitution.
T. B. Short	
Sir Alex Stenning (F.), Past President Sur- veyors' Inst.	District. Surveyors' Association.
Howard Chatfield Clarke (F.), F.S.I.	
E. B. l'Anson (F.), F.S.I.	
Percival Currey (F.), F.S.I.	
Bernard Dicksee (A.)	
Ed. Dru Drury (F.) F.S.I.	
Wilfred Hardcastle (A.) F. A. Perkins	

The conference held four meetings, and discussed the draft regulations in detail, and certain observations were made and amendments suggested and set out in a report which was forwarded to the London County Council.

In forwarding this report, it was pointed out that the report of the Joint Committee on Reinforced Concrete issued by the Royal Institute of British Architects required revision owing to the progress of knowledge and experience, and that the Reinforced Concrete Committee is again sitting to consider what alterations are desirable.

The conference was of opinion that it would be best still to use the methods of calculation given in the report of the Royal Institute of British Architects on Reinforced Concrete, or subsequent reports made by the same body, and not to introduce formulæ into regulations, which would tend to stereotype these particular formulæ, and hinder the development of new modes of construction.

[The example of the London County Council is thus wisely seeking the co-operation and advice of those who should be in the best possible position to render such service will not, we trust, be lost on other local authorities.]

Systems of Reinforced Concrete.

The architect who has occasion to employ reinforced concrete for the first time will perhaps, if he has not paid some particular attention to the subject, be nonplussed by the number and variety of the systems of reinforced concrete he sees advertised and pressed on his notice, and he will probably not quite know what he should do in the matter. He hears, perhaps, vague rumours about the necessity for great care and the value of experience, and he feels nervous of entrusting the work to anyone who cannot point to a large number of executed buildings in which this system has been employed; and, indeed, he may feel that he had better remain conservative and stick to some form of construction of which he has had experience, and that has the warranty of general usage.

The Position of the Specialist.

Now, such an attitude is reasonable in the absence of sufficient information, and we therefore propose to offer a little advice on the subject. Reinforced concrete, though it has only become prominent in this country in the last few years, can hardly now be described as a novel form of construction. It is, as a matter of fact, quite sixty years old, and consequently a great deal of knowledge and experience has been accumulated among those who specialise in the design and execution of such work. It is well to go to specialist designers in this material, just as much as for steel work or heating and ventilation, and the other special trades; for it is a somewhat intricate business, and needs special knowledge to secure efficiency. In time doubtless it will become more of a commonplace of building construction, and architects and civil engineers may be able to employ it for simple cases without the intervention of a specialist, as they do steel to-day; but in the majority of cases we think that reinforced concrete will always need special study, for it is more intricate than steel work. Whether, as in the case of quantity surveying, the work will be done by a professional specialist, or whether it will be still the subject of competitive designing and tendering, as steel bridges often are, as well as mechanical engineering, must remain for the future to determine, but at least for many years to come it will be left to trade specialists with the advantages and disadvantages of competition in design and price. As at present there is so much general knowledge and experience available, the old objection to entrusting work to those who cannot point to many completed works is removed, and it would be safe as a rule to employ any of the specialist firms, provided that a guarantee is obtained.

Concerning Contractors.

As regards contractors, here again education has made such strides that almost any of the reputable firms of general builders are quite competent to undertake such work. An experienced clerk of works is always a desirability, however, and if he cannot be employed, then it may be required that the contrac-

tor shall take responsibility for both design and execution—a course which is theoretically the best, but may in practice not prove so desirable. Some of the well-known specialists undertake both design and execution, others the design only. In any case, the architect will require to have either a clear understanding as to the prices to be charged for any special commodities that may be employed should he entrust the firm with the designing without competition; or, if he throws the work open to competition in price and design, he should provide a very clear and detailed specification of the basis upon which the design is to be prepared, the safe working stresses that must not be exceeded, with various qualities of concrete and steel, the modular ratio of steel and cement, and so on, pending the adoption of municipal regulations in the district in question. Afterwards the design should be checked before final acceptance—not checked throughout, perhaps, but in important particulars, and allowing a certain degree of latitude. If that course is not pursued, it may be that risks will be taken in order to get the job, and as that is obviously very undesirable to all concerned, the more careful firms will welcome such stipulations, which are really safeguards for themselves.

Choosing a System.

No one can properly say at present that any one system is the best, and will suit all circumstances. It is therefore advisable at present that competition should be quite open, and this can be either done by writing to all the firms or by advertising for designs and estimates. Before requiring details of the designs to be submitted, however, the architect or engineer ought to supply the fullest particulars with drawings which can now be supplied cheaply by the many duplicating processes. The prices should be compared, and first the lowest satisfactory tenderer asked to furnish drawings and details for general checking before any others are put to that trouble. Those details will not be very full at first, for it would increase the cost of work unduly if every firm went into every job elaborately in the early stages. Sufficient time should be given to prepare a few working drawings if it is desired to check closely before acceptance; but in such a case it should be possible from the first general details received to give a provisional acceptance that will warrant the firms going to the expense. Some of our Government departments have not regarded this quite rightly in the past, and have led the specialists to incur much unnecessary expense by asking for too much in the preliminary stages. It is obvious that all such work has to be paid by someone, and that it eventually comes back to the consumer, and it is a bad policy for the community to foster ineffective or useless labour in any direction.

There seems a tendency with many persons to talk disparagingly of concrete, and especially of reinforced concrete. Such disparagement, however, really betrays ignorance.

The truth is that such ignorance is a legacy of the past, and the real cause of the objections to concrete in its modern employment is the opinion gained from experience years ago with inferior cement, and in the early days of usage, when little or no science was employed in concrete making. Perhaps the chief misconception that our users to-day have to get out of their heads is that concrete is a material made with a large amount of any old rubbish and a small amount of cement that serves to fill up holes, cover up delinquencies, and serve as a cheap and weak bearing surface. Concrete to-day is becoming recognised as an opportunity for care, science, and proper manufacture. The cement of to-day is very different from that supplied generally a few years ago. We know now that the materials of the aggregate must be clean and well graded, as well as properly proportioned and mixed. We know also that whereas about 50 tons per square foot was the average ultimate crushing resistance of good concrete, the best concrete of to-day will withstand 350 tons on an average, and even 600 tons as a maximum per square foot. Poor quality concrete to-day should have a resistance of 150 tons. It is therefore in consideration of modern concrete of the best that we should reconstruct our ideas.

Improvements in Material and Methods.

By all means let us use concrete as a filler when we want it for that purpose, and let it be as poor as may be—the proportions may now, however, by the exercise of a little science, be such as to show economy over older ways; for we can use proportions such as 15 to 1 with advantage. Cement has been steadily falling in price for many years past, and improving in quality, so that we find it economical to employ strong mixtures, and now that we can employ steel in conjunction we find we can construct satisfactorily from every point of view at much reduced prices. In reinforced concrete the materials are scientifically proportioned and graded, so that maximum density is obtained, with the minimum of voids, and the cement therefore goes further. The proportions are seldom weaker than 1 cement, 2 sand, 4 larger material, and often 1:1½:3 or 1:1 1-3rd:2 2-3rd is employed, and sometimes 1:1:2. The older concrete was made 1 cement to 6 Thames ballast (a material that is not well graded naturally, containing too much sand, and so letting the cement get lost in the voids), and for poor quality 1 to 10. Then also no attention was paid to cleanliness, and such proportions are not properly to be compared with modern ones of the same figures, for as before mentioned the cement was inferior, in great part consisting of coarse particles which were no better than sand, the cementitious property really depending upon the "flour"—i.e., the particles that pass the finest woven sieves. The word "concrete," then, in the term "reinforced concrete" means a very different material from that understood in the general conception of concrete.

The Architectural Treatment of Concrete.

The proper use of concrete architecturally is a subject that must increasingly attract the attention of architects. Experience and understanding of the material are primarily necessary to an elucidation of the problems that are arising in the architecture of the present and future with ever greater insistence because of the growth of

the use of concrete in modern buildings. We continue to employ concrete as the mere bones—the skeleton—of our construction, and bedeck it in clothes of any other material than that most nearly allied to itself even, and we seldom let it be seen in its nakedness where we attempt at all to treat it architecturally. Thus we see solid concrete walls built in situ and in blocks plastered with plaster of Paris or allied products internally, and rough cast outside. It is true that of late moulded hollow concrete blocks have pressed themselves forward into notice, but they have simply taken on the forms of—copied—stonework or brickwork. There are a number of cottages, built many years ago, at Croydon, from designs by Mr. Norman Shaw, R.A., in which the walls are of concrete slabs cast with a red-coloured face moulded into the shape of weather-tiling, and it must be confessed that they are an excellent copy and look very well until we find that like the stone villas built with hollow blocks to-day they are mere shams, pretending to be what they are not, a fact which soon becomes noticeable to even the ordinary layman who has "eyes to see." That, then, is not the way of architectural salvation.

Alternative Treatment.

The alternatives offered are to deal with the concrete itself, and in considering that we will exclude for the moment the plastered surface where cement mortar is used, though that is allied to that body. The methods that are offered at present are to secure texture if we cannot form by employing selected aggregates, working the material with paddles or blades inside the shuttering to bring the finer material to the face, and then removing the centering as quickly as possible so as to enable the surface to be scrubbed with a wire brush while green, thus exposing the aggregate and doing away with the glossy cement skin. If the work should have been unavoidably set too hard for this process we may employ scabbling hammers, muriatic acid (spirits of salts), or a sand blast to effect much the same effect. Another method that has been adopted is to cast the work in forms covered with a rough canvas which leaves its impression on the surface, and so gives a roughness that possesses "texture."

Surface and Form.

This last consideration suggests that patterned surfaces from the moulds might be legitimate, provided they clearly showed the material was concrete, and did not attempt to imitate some other. However, texture is not all—we must have form in architecture too—and by "form" is here meant detailed treatment, and not mass. We must, to express our ideas, have an architectural language, and texture is but a very elementary tongue. So then we come to the great stumbling-block with concrete. It must be confessed that in great part here we must leave tradition, which the architect feels so bound to, and so unsafe without, and it remains for the architects now and to-morrow to experiment with forms that shall fit themselves to the methods of manufacturing or manipulating concrete. We cannot employ the same mouldings as in joinery or in masonry, though we can still use some of a kind, for projections and indentations are easily cast. We could certainly employ repeated ornament or pattern the same as has been done for terra cotta, but that bears the stamp of the machine—as indeed does much of our pre-

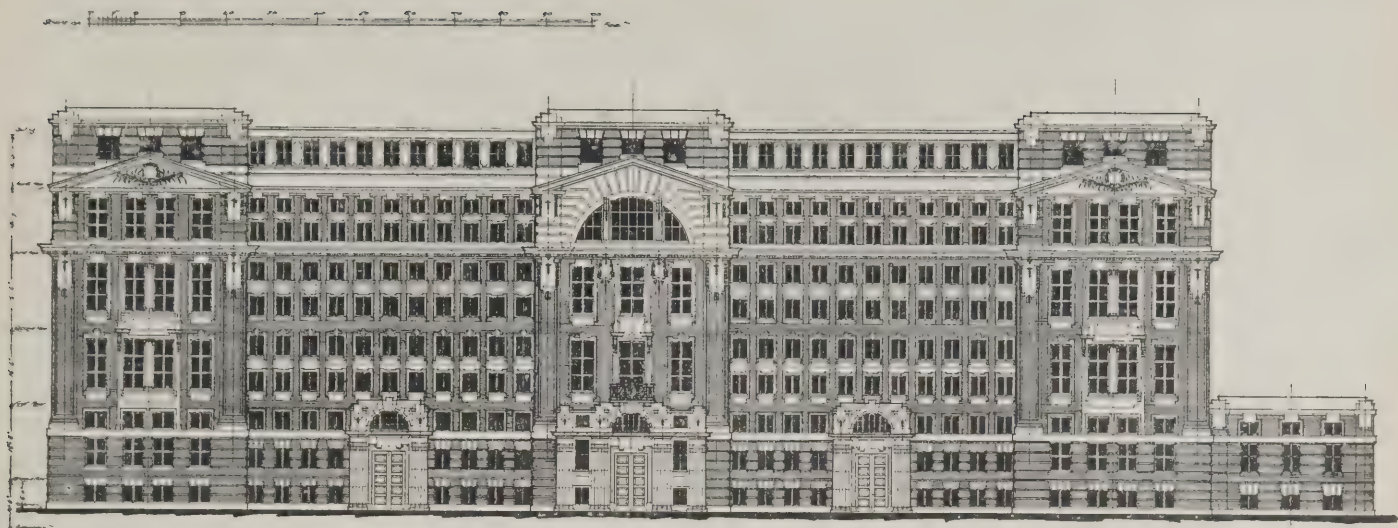
sent day masonry and joinery—and lacks interest and does not befit the highest emotional art, but even here concrete should not entirely fail us, as indeed would be regrettable with so durable and strong a material that lends itself to the construction of gigantic buildings with such freedom.

Modelling in Relief.

There seems no reason why concrete, if we used a properly prepared cement, should not be modelled in low and high relief like clay. It would certainly lend itself to sgraffito. There is a white cement that is now being produced which removes the reproach of the grey colour so usually associated with cement, though we can by a choice of strongly coloured aggregates get permanent colour effects that look quite well in practice. Then, when it comes to ornament, we can insert in the concrete or apply to the surface in places marble, stone, terra-cotta, mosaic, and faience. Indeed, a good deal of work is being, and has been, done recently in the United States, where tiles have been embedded in the form of panels and strings to relieve the plain concrete surfaces, and we have seen some charming effects illustrated of treatments of chimneypieces, and other interior work in houses. Reinforced concrete is being employed now in England for several churches, and we see no reason why it should not be brought into the scheme of architectural treatment without being hidden under a skin of plaster, or covered externally with slates, tiles or lead.

Interesting Problems.

There is, however, much room for experiment in this direction; but considering that we are in the midst of the first real constructional innovation in durable building that permits of architectural treatment, which steel, no matter how important it was commercial, yet by reason of its impermanence could never be, it warrants the serious attention of the whole architectural profession for a solution of the problems it raises. Every material, of course, has its proper place and usage in architecture, and concrete can never replace any or all, but it must, and will, be employed for its own distinct sphere, which is, we can now see, a very wide one. It would be foolish to prophesy, but it seems most probable that our architecture will be transformed by reinforced concrete in a way which no other material or method of construction has done since the Middle Ages and the day of Gothic—which was primarily the period for the full development of the use of stone as a structural material. The architects of that day took the new methods, and gave an architectonic form that rose to the greatest heights of emotion, and we should see if we cannot do the same with concrete, both plain and reinforced. The Romans had concrete, of course, but it was not the same quite, and it was certainly not made in the way it is now, and their concrete did not, therefore, possess the possibilities of ours, so that the Romans, though they offer us a few hints as to how it may be used, by no means carried it to full development in any direction. Hence the future of reinforced concrete construction is a most interesting one from the architectural point of view, and there is every likelihood that the manner of treating it will ultimately be wholly successful in the hands of designers who possess the requisite knowledge.



ELEVATION TO MANOR GARDENS

NEW MONEY ORDER BUILDING, HOLLOWAY. (H.M. OFFICE OF WORKS.)

THE NEW MONEY ORDER BUILDING.

The new Money Order Department, Holloway, is the latest of a series of large buildings for the extension of Post Office facilities in London. The entire construction is in reinforced concrete on the Coignet system.

The building is composed of a main body with three wings. The total length of the front measures approximately 291ft., and the main body has a width of 50ft. The dimensions of the three wings are respectively 88ft. by 42ft.; 101ft. by 42ft.; and 76ft. by 42ft.

The total height of the structure from the ground level to the roof is approximately 85ft., and the structure comprises a basement, five reinforced concrete floors, and a flat roof. There are also a large number of mezzanine floors throughout the height of the main body. The walls of the

wings from ground floor are also in reinforced concrete, with a thickness of only 5ins. The front elevation is at present being executed in brickwork and masonry under a separate contract, by Messrs. Leslie and Co.

The elevations to Manor Gardens, and the west return of the front block are being executed in red brick and Portland stone. The sashes and casements throughout the building are of steel. The internal surfaces of the walls generally will be tiled, and the floors, which will have an area of about three acres, will be laid principally with maple blocks.

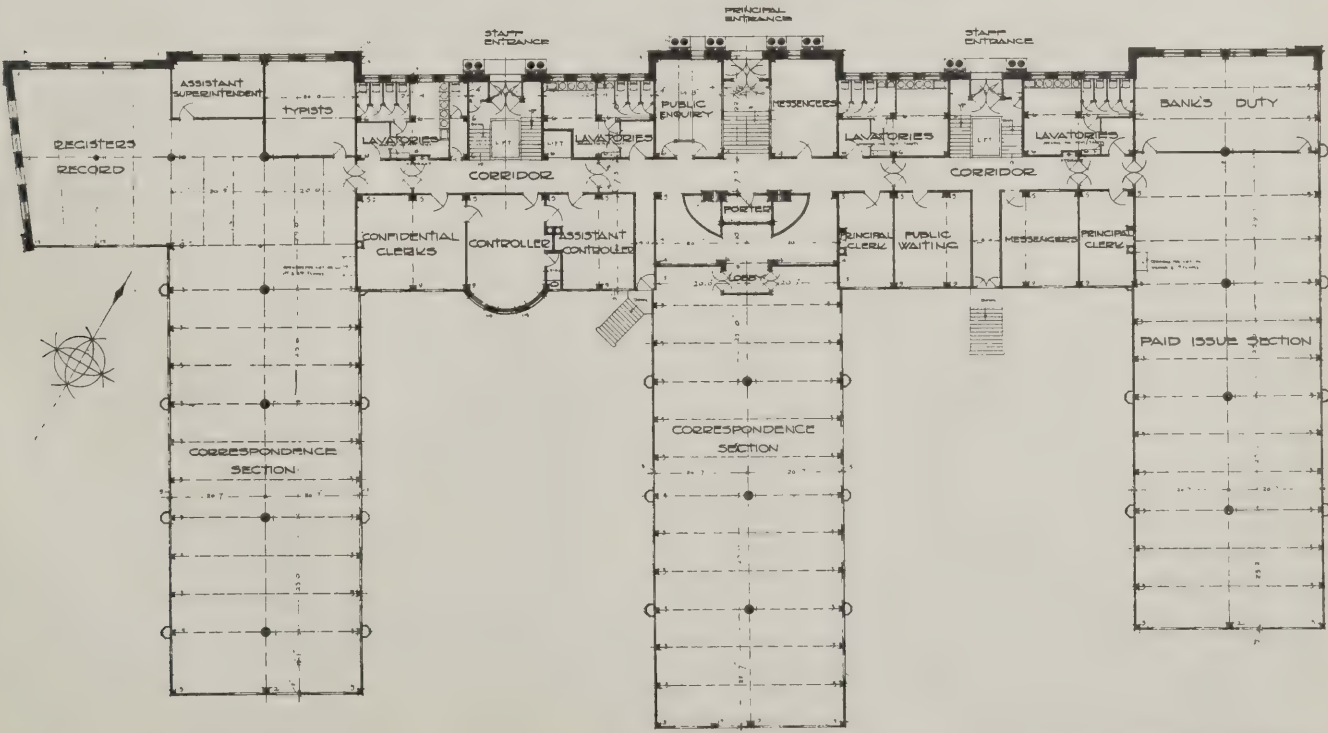
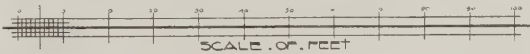
The stairs, balconies, and ventilation shafts are entirely in reinforced concrete, and a boiler house in the same material has been built partly underground at the back of the building. The dimensions of the boiler house are approximately 47ft. in length, 36ft. in width and 26ft. in height. The chimney shaft to the boiler-

house is by Messrs. Ingles, Warner and Company.

Owing to the nature of the ground, which is composed of clay, it has been necessary to make the walls of the boiler house in the shape of strong retaining walls. An underground passage provides means of communication between the boiler house and the various wings of the building. An underground water tank, of about 7,000 gallons, has also been erected in reinforced concrete.

The contractors for the reinforced concrete work, Messrs. William King and Son, who have also erected on the Coignet system the new Western District Post Office in Wimpole Street, have succeeded in completing their contract well within the time specified for the execution of the work. The concreting operations were begun about the middle of the month of December, 1909, and the building was practically completed at the end of July,

NEW MONEY ORDER BUILDING



GROUND FLOOR PLAN

H.M. OFFICE OF WORKS
CARLISLE PLACE
LONDON S.W.



MONEY ORDER BUILDING, HOLLOWAY: GENERAL VIEW SHOWING REINFORCED CONCRETE CONSTRUCTION.

1910, the time required for the execution being only about eight months.

The rapidity with which this large building was erected should go far to prove that reinforced concrete structures may, in certain cases, be erected more quickly than steel structures. It must be remembered also that the work was carried out during the winter, which is, of course, an unfavourable season for the execution of buildings, more particularly in reinforced concrete.

The Coignet system of reinforcement consists of round bars of varying diameters between 3-16in. and 1½in. embedded in the concrete in a suitable position to take up the tensile and shearing stresses. The reinforcement of the pillars consists of a certain number of longitudinal rods bound by a spiral wire of small diameter. The floors are composed of a meshwork of principal bars about 5in. diameter, and distributing rods of ½in.

The reinforcement of the beams is composed, in the lower or extended portion, of one or several groups of bars. Each group is composed of seven bars. The ends of six of the bars are bent upwards at an angle of 45 degrees, and hooked over a longitudinal bar of small diameter, placed in the upper compressed portion of the beam. By this arrangement the section of steel in tension is greater in the middle portion of the beam where the bending moments are higher, and the section

is gradually smaller towards the supports where the bending moments are less. The ends of the bars, which are bent up and gradually spaced closer together towards the supports, are intended to counteract the shearing stresses in the beam. The reinforcement of the walls is simply composed of a meshwork of ½in. bars. Several portions of the flooring were tested by the application of a load 50 per cent. in excess of the specified superload. The results obtained were entirely satisfactory in every case. "Ferrocrete" cement, supplied by the Associated Portland Cement Manufacturers (1900), Ltd., was used for this work.

The round bars of mild steel were supplied by the Earl of Dudley's Round Oak Works. The architects are Mr. J. Wager, A.R.I.B.A., and Mr. J. Rutherford, both of H.M. Office of Works; Mr. Rutherford superintending the execution of the work; Mr. W. Elliott being the clerk of works.

New Bridge at Earl's Court.

The great bridge at Earl's Court, which connects the eastern or lagoon end of the grounds with the middle portion, is to be demolished at once, and a new one built to serve both as a bridge and as an exhibition building or promenade. It will be 40ft. wide, with granolithic footways. The old bridge was erected in 1887 in celebration of the first Jubilee of Queen Victoria's reign.

POINTS IN GENERAL CONCRETE PRACTICE.

BY THOMAS POTTER, M.C.I.

The following is an abstract of a paper under the above title which was read by Mr. T. Potter, at the meeting of the Concrete Institute held on Thursday, December 15, 1910, at the Royal United Service Institution, Whitehall, London, S.W.; Sir Henry Tanner, President, in the chair.

Concrete practitioners in the past, engaged in building practice, appear to have kept their experience very much to themselves, except in connection with engineering works and specialities in connection with reinforcement for walls, floors, roofs, and similar purposes, which have been dealt with in a voluminous manner by specialists and patentees. This paper, therefore, has been confined to the use of concrete in connection with buildings, apart from any association with reinforcement or steelwork, for the consideration of which the limited time at disposal is insufficient.

Theory and Practice.

Concrete and its application appear to set most theories at defiance—many that have been proposed hitherto, with every good reason for acceptance, have been negated in practice. No doubt, eventually, there will be much valuable information and data made common in connection with the use of concrete that may be relied on by the architect, builder, and clerk of works. At present the information available is not altogether of that character. For this reason treatises on concrete, written only a few years ago, even, based principally on theoretical deductions, should be read with caution. Its very simplicity has led to its abuse; for it has been, and is still often, considered that anything nearest to hand—for instance, pit gravel of any description, broken stone and brickbats mixed with all kinds of rubbish—will do for an aggregate, that the cheapest cement in the market is quite good enough for a matrice, and that the cleanliness of the water requires no consideration—anything will do. This is altogether wrong.

The Human Equation.

Another factor is the human equation. The cement may be good, the aggregate of a suitable nature and well graded, and the water clean; but if the materials are not thoroughly mixed, and the water is not suitably proportioned, the value of the concrete is seriously diminished. Machine mixing remedies this to a great extent; but for many building purposes mixing machines do not seem as yet to find much favour. The mixing of concrete is not a favourite occupation with workmen; it is laborious work, which can be lessened if the materials are not wrist-turned, but simply lifted in the shovel and deposited close at hand without being turned over. Workmen who are efficient as labourers in most directions are not always equally so as concrete workers.

In the author's experience, the better class of country labourers are by far the best for the purpose; they are willing, have no preconceived notions as to the fitness of things, and are tractable. Many town labourers are very much the reverse.

Suitable Aggregates.

The principal materials more or less adapted for aggregates, most of which the author has used, are granite and other stone quarry chippings, broken brick or tile-yard debris, burnt clay, slag from iron ore, flints, furnace or boiler ashes, coke-breeze, and chalk. Chalk would be rarely used in an ordinary way, more

especially the top stratum, which is soft, porous, and easily affected by frost; but the author had used it where it was difficult to obtain any other except from a long distance. For small holdings in chalk districts, no doubt good substantial dry walls can be made with chalk concrete if better aggregates are difficult to obtain.

Coke Breeze.

Coke breeze as an aggregate is thought by many to be beneath notice. It was extensively used for many years, principally for floors, but, the author thought, undeservedly lost its character some time since through a letter in the "Times" telling of its failure in Germany, where it had been prohibited. It was not stated, Mr. Potter believed, of what class of coal it formed the residue, and this is an important point. He had seen some in Scotland totally unfit for concrete purposes, but not in England. This letter was followed by others telling how it was of such an inflammable nature that if exposed to a severe fire it was second only to coal in assisting combustion. Another letter stated that it disintegrated in the course of a few years, and crumbled away. The author thought that this backing up of the first statement was a case of giving a dog a bad name.

So far as its strength is concerned, Mr. Kirkaldy made some experiments for the West Ham Corporation some years since, with the following result: A brick pier 18 in. square, and 18 in. in height, made with best stock bricks and blue lias lime mortar, crushed at the end of two years with 46 tons per sq. ft.; a similar pier of Harold Wood bricks and blue lias lime mortar crushed with 75 tons per sq. ft.; another pier, made of six parts of coke breeze to one part of Portland cement, crushed with 131 tons per sq. ft.

As to inflammability, the tests made by the Fire Prevention Committee with various kinds of floors, each under similar conditions exposed for three hours to an increasing and ultimate temperature of 1,900 deg. F., and water played on them from a hose pipe, gave the following results: Coke-breeze and burnt ballast equal and best; each was found, after being allowed to cool, practically free from cracks of deflection, and Thames ballast and granite chips the worst.

The author had used some thousands of tons of coke-breeze for floors, and did not remember a failure of any kind therewith. He was aware that coke-breeze is condemned by many as an unsuitable aggregate, but could only speak from his own experience; and, although it is not, taken altogether, the best material for floors and roofs, he had found it one of the best. But, as with other materials, there are good, bad, and indifferent qualities; he had known ashes from dust-holes to be mixed with it.

Boiler Ash.

One of the best aggregates for most purposes is ash from locomotive boilers. It contains no impurities, is obtainable at most railway stations, and is inexpensive; but one company allow their engine drivers, when passing through a lias limestone district, to use fragments of limestone in the furnaces to economise the coal consumption. How they obtained it the author could not say, but it is not very perceptible among the ashes, and does not shake perhaps for some time after the concrete has been in place; but when it does it entirely ruptures the concrete. The author had known floors and stairs to be entirely reconstructed as a result. He believed no other railway company sanc-

tioned this, but where locomotive ashes are employed enquiry should be made relative thereto.

Plaster of Paris.

As is well known, plaster of Paris was used as a matrice previous to the employment of Portland cement. Where alterations have been made to buildings with floors of this description, the old concrete has sometimes been re-used as an aggregate, with the result that expansion has taken place, and the concrete has been ruined.

Aggregates that have passed through fire are charged more or less with sulphur, and slag from iron ore more than any other. The only way to liberate the sulphur is to expose it to the atmosphere for as long a period as possible. The author had used slag that had been aerated for a long period, which made concrete less susceptible to change of form than any other aggregate. United States Government tests have proved that the carbonate of lime which forms so large a constituent of Portland cement neutralises the effect of sulphur in aggregates to a great extent.

Parts of Aggregates Equivalent to Sand.

It is usual to specify that the sandy and dirty element in some aggregates shall be screened out and replaced by coarse, sharp sand, but the author could never understand the object of this. The coarse sandy element of suitable aggregates, such as slag furnace ashes, brick debris, or crushed stone chippings, is in every way as good as pit or Thames sand, but it is desirable to eliminate the portion below the size of coarse sand, and perhaps it is considered impracticable to remove one without the other. But the author's experience is that it is more economical and effectual to wash out the fine dirty and dusty particles, and leave in the coarse sandy ones. He could not call to mind ever at any time mixing sand with an aggregate, or being called upon to do so. River gravels as a rule contain sufficient, and a stone-crusher can be set to reduce any material to make quite fine enough for the purpose.

Grading Aggregate.

The size of the aggregate has long been a disputed point, but United States Government tests have confirmed what has always been the author's practice—namely, that, no matter the purpose for which it is used, the coarser the aggregate, provided perfect homogeneity or denseness is secured, the stronger the concrete. The size, however, depends upon the nature of the work. A very coarse aggregate, so that it is graded by intermediate sizes down to that of coarse sand, would be the best for wide and deep foundations, but far too coarse for floors, roofs, walls, or partitions—it depends entirely upon their thickness.

It has been attempted to standardise the size of aggregates for various purposes, but the author contended that it depends entirely upon good grading, and that there are few materials which come to hand in their natural state, or converted by a crusher, that are well graded.

Cleanliness.

The cleanliness of the aggregate is another factor of the greatest importance. Most aggregates are unclean, except, perhaps, river gravel from a quick-running stream. Very few pit gravels are clean, and as a rule they are the most difficult to wash. They are usually mixed with unctuous clay, which is difficult to get rid of, and which is injurious to cement. If

clean, the particles are usually of a rounded shape, the result of attrition at some former period, and not a desirable one for an aggregate.

It may be thought that quarry waste, brick-yard debris, slag, and materials generally that have passed through fire, are quite free from deleterious matter, but they are not. If they have passed through fire, and been broken by hand, or by a stone-crusher, the particles will be found covered with a fine impalpable dust, almost imperceptible. If they are washed in a tub, as an experiment, and kept well stirred, the water will be found charged to a considerable extent with this dusty element, which is injurious to cement.

Practically nearly all aggregates are very much improved by washing, which is an economic process if measured by strength.

Mixing Concrete.

The aggregate and matrice should be turned over twice dry, and twice while water is being added, and never less; the more they are mixed, the better the concrete, and the more readily the various sized particles find their respective positions in the mass. For many years it was advocated that only as much water should be used as will coat the aggregate with the cement, and render the concrete of a sticky character. Actual practice is convincing enough to prove that this is wrong. The particles of the aggregate do not slide easily into place, and the concrete is not dense. But if the concrete is in a sloppy condition, better homogeneity or denseness is the result. It is almost needless to say that the water used in mixing concrete should be clean; if otherwise, the effect is equal to that of using an unclean aggregate.

Plums or Packing.

What are known in the United States as "plums," but which the author had always called "packing," are pieces of broken stone or quarry waste, or other suitable materials of considerable size embedded in the soft concrete as the work proceeds. Packing may be any size so long as it does not reach the vertical faces of foundations of monolithic walls by at least 2 in., and the particles are kept apart at least 2 in., and are well rubbed in the soft mass, not merely laid on the concrete. Obviously the material must be clean. Some practitioners claim that packing adds to the strength of concrete; and, if carefully dealt with, it certainly does not diminish it so far as the author's experience goes, and it lessens the cost.

Concrete Walls.

The disadvantage of building monolithic concrete walls is the cost of the forms or shuttering necessary for forming the troughs in which the concrete is to be deposited. In some cases it is common knowledge that it has cost as much as the concrete. In addition, unless it forms a backing to stone or brickwork, it has to be cemented or rough-cast externally, so that the cost is often more than that of brickwork.

For buildings of some magnitude—of a plain character, free from irregularities of plan, and of simple design, such as warehouses, farm buildings, and factories—it can be used in most cases to advantage, so far as regards cost, while it possesses much greater strength and durability and freedom from the necessity of repairs—more so than ordinary brick walls. It is too early to affirm how long monolithic Portland cement concrete

buildings are going to last, but there is not much doubt on that point. The oldest in this country probably does not exceed forty-five to fifty years.

With regard to monolithic concrete walls being weather-proof, the author had never known an instance of their being otherwise, if they were cemented or rough-cast externally.

We are told at times that plastered concrete walls are subject to condensation, but they are not more so than walls of stone or brick, or as much; with the further advantage that after a period of six months, or thereabouts, condensation very rarely occurs in an ordinary house, owing to the walls being of a more equable temperature. The concrete walls of a public building, when the latter is crowded, may give evidence of condensation, but that does not come within the author's experience.

As a hygienic material, concrete is superior to any other. If we go into the rooms of a brick house after they have been shut up for some time, there is often a musty, fungusy smell prevailing. The author had never found this in a concrete house or a cottage after it had been closed for a time. The rooms in a well-built concrete house are cooler in summer and warmer in winter than those of a brick house, as concrete walls are more equable in temperature.

The Future of Concrete.

With regard to the future of concrete for buildings, and allied purposes in large towns, its present use seems to indicate that it will be confined principally to floors and roofs, and in connection with skeleton steel-frame construction, and certain purposes for which cement and granite chips can be employed, such as pavings, steps, stairs, sills, lintels, etc. Monolithic reinforced walls will possibly not find much favour; there is the difficulty of external surface treatment, the cost of temporary forms, and minor difficulties which would not occur in most districts. In the country there should be more scope for the use of concrete. Eventually concrete building may be, and should be, a distinct occupation. The walls of factories, workshops, warehouses, and a similar class of buildings where no great architectural efforts are needed, and which are simple in plan and arrangement, can be built at a less cost than with brick or stone; and for farm buildings it is still better adapted, as it is applicable not only to walls, but to pavings for livestock places, and for floors, and almost the entire fitments. Mangers, feeding-troughs, water-troughs, tanks for storing rainwater, stable stall divisions, channel gutters, and manure pits, are all better executed with concrete than with any other material, and at a less cost.

Buildings of this class are practically free from the farmer's enemies, rats and mice, or can be made so with a little care. Rats, the most cunning of rodents, very much dislike concrete buildings. They can bore their way through a brick-wall, but they never attempt to practise on a well-constructed concrete wall, and are averse from occupying buildings that afford better retreat than open doors, and harbours of refuge which are not out of reach of man and dog.

For cottages and buildings, for small holdings, it is also well adapted. Where low-lying grass lands and meadows are intersected by running streams, there is a necessity for foot-bridges, cattle bridges, sluices, hatchways, sheepways, etc., and for which there is nothing can compare with concrete for economy of cost and durability.

Mr. E. Fiander Etchells, Mr. S. Bylander, Mr. R. W. Vawdrey, Mr. E. Wait, Mr. Henry Puplett, Mr. L. Serrailier, and Sir Henry Tanner took part in the discussion which followed the reading of Mr. Potter's paper.

PROPORTIONING CONCRETE.

What is called the "density of a mortar" is the total volume of solid particles—exclusive of water and voids—entering into a unit volume of mortar. If the term "density" be applied to sand alone it means the proportion of the measured volume of the sand that is occupied by the solid sand grains. For example, a sand having 40 per cent. voids would have a density of $1.00 - .40 = 0.60$.

The "elementary volumes" in a unit volume of fresh mortar consist of the absolute volumes of the cement, sand, water, and voids, each expressed in the form of a decimal. To illustrate: the "elementary volumetric composition" of a mortar mixed 1 part cement to $1\frac{1}{2}$ natural sand by weight was:

Cement (c)	= .226
Sand (s)	= .499
Water (w)	= .234
Air voids (v)	= .041

Total volume = 1.000

Expressing this in more familiar terms: 22.6 per cent. of the unit volume of the given mortar consisted of solid particles of cement, 49.9 per cent. of particles of sand, 23.4 per cent. of water, and the remaining 4.1 per cent. of air voids. The "porosity," represented by the sum of the water and air voids was 27.5 per cent., and the "density" of the mortar was 72.5 per cent.

The following is a list of specific gravities of various aggregates used in concrete, and by weighing a cubic foot of material in the state in which it is to be used, we can from these data, calculate the density and porosity.

Weight of solid	cubic foot of rock.	
Sand ...	2.65	165
Gravel ...	2.66	165
Conglomerate	2.6	162
Granite ...	2.7	168
Limestone ...	2.6	162
Trap ...	2.9	180
Slate ...	2.7	168
Sandstone ...	2.4	150
Coke Breeze	1.5	95

We can calculate the volume of materials required to make any volume of concrete by the following formulæ:

Let c = absolute volume of cement.

s = absolute volume of sand.

g = absolute volume of gravel or stone.

w = absolute volume of water.

a = absolute volume of air.

m = ratio of absolute volume of water plus air voids of cement to absolute volume of cement. (The absolute volume of a material is that obtained by deducting the voids.)

n = ratio of absolute volume of water containing grains of sand plus air entrained in gauging to the absolute volume of sand.

p = ratio of absolute volume of water coating particles of aggregate plus air voids (due to imperfect mixing) to absolute volume of aggregate.

v = volume of concrete produced.

Then $V = c + mc + s + ns + g + pg$;
or $V = (1 + m)c + (1 + n)s + (1 + p)g \dots (1)$

The ratio n is composed of two variables, one depending on the coarseness of the sand, and the other upon the ratio of cement to sand, since a lean mortar contains more air voids than a fat one.

It so happens that this ratio, by a coincidence, can be expressed as a factor, experiments showing that the variation of voids caused by different proportions may be provided for by taking the cement and sand together. For different proportions of the same cement and sand the sum of water and air voids is approximately a constant.

Where there is no sand formula (1) must be used, but we can reduce it for ordinary working conditions to the following:—
Let

r = ratio of absolute volume of water plus air to volume of cement plus sand.

Therefore, by definition,

$$r = \frac{1 - (c + s)}{(c + s)}$$

From which

$$1 + r = \frac{1}{c + s}$$

Then $V = c + s + r(c + s) + g + pg$
 $= (1 + r)(c + s) + (1 + p)g$.

Substituting average values for r and p we get $V = 1.34(c + s) + 1.08g$.

If extremely fine sand is used, then we have $V = 1.65(c + s) + 1.08g$.

The constant $(1 + p)$ varies between about 1.04 and 1.08, so it may be varied also if desired. If we substitute for the absolute volumes c , s , and g , the measured volumes C , S , and G , multiplied by their density d_c , d_s , or d_g , (i.e., proportion of solid material therein) we get the formulæ into a working form. Thus as cement is assumed to weigh under average conditions in practice 90 lbs. per cub. ft., and the specific gravity is 3.1, and water weighs 62.4 lbs. per cub. ft., we have

$$d_c = \frac{90}{62.4 \times 3.1} = .466.$$

Thames sand again weighs about 102 lbs. per cub. ft. Therefore its density is $d_s = \frac{102}{165} = .617$. In the same way we may find d_g .

The formula then becomes—

$$V = 1.34 \times .466 C + 1.34 \times .617 S + 1.08 G d_g$$

Supposing we require to know the amount of cement, sand, and aggregate in a cube yard of concrete we substitute 27 cub. ft. for V and express the proportion of S and G in terms of C . Thus for a 1:2:4 mixture we put $S = 2C$, $G = 4C$, and we then ascertain the value of C in cub. ft., and having that, can get S and G . As it is best always to specify cement by weight, we first multiply the number of cub. ft. thus ascertaining by 90 to bring it to lbs. This rule is simple to use and enables us to tell very exactly the amount of materials entering into a cubic yard of concrete, which varies with the kind of materials and the proportions. It will avoid the mistakes often made by contractors who work on rough assumptions. Indeed, many have made the mistake of supposing that 1 yard of cement, 2 yards of sand, and 4 yards of gravel will yield 6 yards of concrete, thinking that only the cement is lost in the interstices, whereas most of the sand disappears also. But not all goes, and we should determine the exact amount by making a few experiments, and using the foregoing formula, if we are to be scientific and estimate closely.

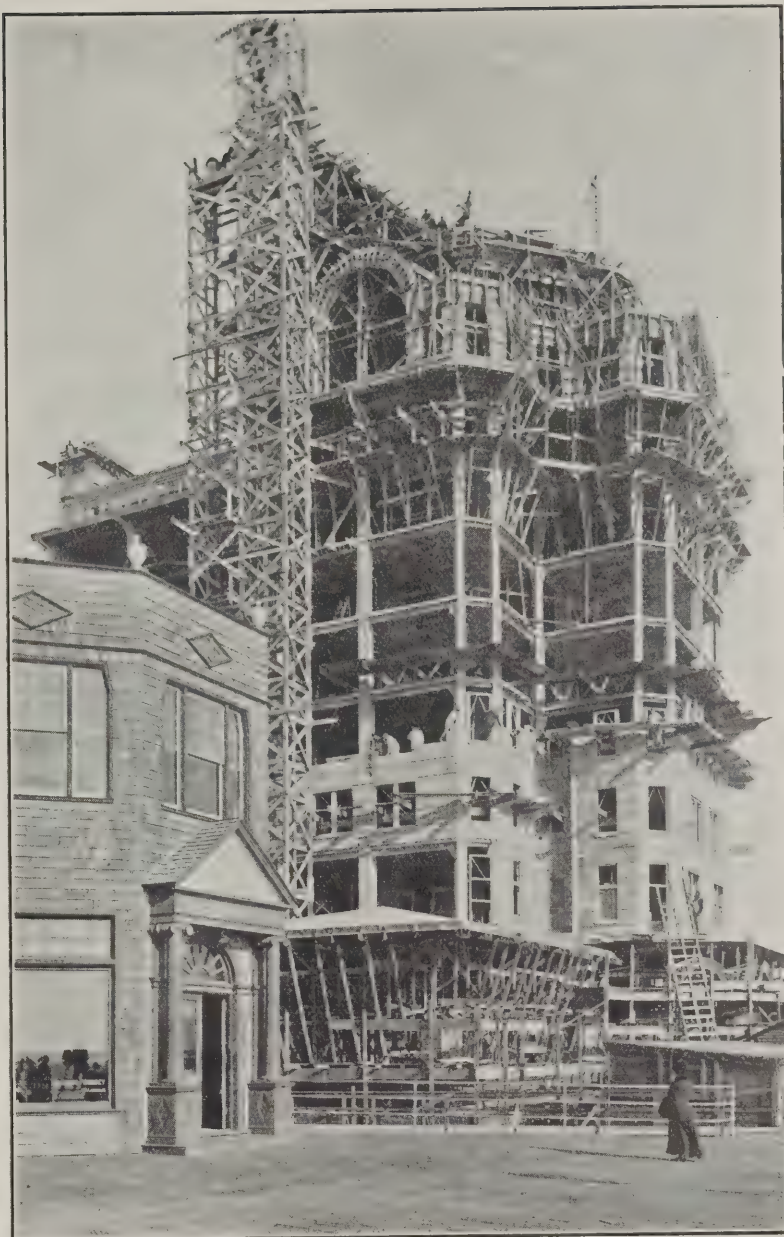
A BELATED ATTACK ON REINFORCED CONCRETE CONSTRUCTION.

In the "British Clayworker" for November there is an article entitled "Some Disadvantages of Reinforced Concrete." The title is sufficiently frank; and the article itself is a perfectly legitimate piece of special-pleading—only that, and nothing more. The writer's statement of the case against reinforced concrete must be somewhat heavily discounted in view of the fact that he holds a brief for bricks. Nevertheless, he has the temerity to speak of "the exaggerated claims of commercially interested persons!"

As this journal happily does not labour under any such embarrassing disqualification, but has for its sole object to serve faithfully all sections of the building trade, and to state only what we believe to be strictly true with regard to any and every kind of method and material, it is very far from our intention, now or upon any other occasion, to take up the cudgels of any one section against another. Besides, what we have seen of the newspaper war on this subject, which is waged with intermittent fury in the rival trade organs of the United States, leads us to deprecate any approach to a similarly futile and exasperating controversy in this country. Consequently, we do not care to traverse point by point the altogether one-sided statements of the writer in the "Clayworker." Almost every point that he raises has been dealt with in these columns; with the all-important distinction that whereas he sets forth only one side of the question, we, being absolutely free from the slightest reason for bias one way or the other, have always tried to keep the balance level, and have, therefore, felt ourselves entirely free to state both sides of the question without fear or favour.

We have, for instance, constantly insisted on the necessity for careful supervision of the work and testing of the materials; and we have also never denied the difficulty of the problem of architectural treatment of the material. On the other hand, unlike our contemporary, we have never exaggerated these points. Difficulties are to be overcome; and in both these respects there is to be noted a constant tendency towards increased efficiency on the one hand and improved appearance on the other; but this tendency our contemporary, approaching the subject in a partisan spirit which cannot be disguised, has seen fit to ignore. It is much too late in the day to advance these objections; because, at the present time, there is no dearth either of expert designers or of skilled workers in reinforced concrete. Our contemporary's contention, therefore, that "workmen will not, and, moreover, cannot reasonably be expected to realise the responsibility thrown upon them," is not only belated, but quite gratuitous. Very much more delicate and difficult operations than those exacted from the workmen trained in reinforced concrete work are conscientiously and successfully performed daily and hourly in many other industries by persons who are less highly paid and less sedulously watched.

Our contemporary's rather lame deduction from this wholly one-sided and by no means deadly indictment of reinforced concrete is: "Having regard to all these circumstances, it would appear that brickmakers have no reason to fear the



This is an example of a reinforced concrete construction carried out with stone walls. The elimination of external scaffolding not only saves a considerable amount of money, but its construction would prove impractical, even impossible, in structures which run to thirty and forty storeys high.

HOTEL TRAYMORE, ATLANTIC CITY N.J.

extensive use of reinforced concrete in the near future." But why shut one's eyes to the facts? We regret exceedingly the depression under which the brickmaking industry is at present suffering; but we cannot regard it as being wholly accounted for by slackness in the building trade. Surely it is quite obvious that the many large and important reinforced concrete buildings that of recent years have sprung up all over the country must have had a very seriously restrictive effect on the output of the brickyards. But surely it is better to face the fact than to pretend to ignore it. Almost alone among the professional journals we were quick to recognise the possibilities of what can be no longer called the new system of building. It is because we discerned that its rise and progress would be inevitable that we urged—as we still urge—upon architects and builders to take every possible means of mastering its peculiarities. Events have justified the attitude that we have consistently assumed. Reinforced concrete construction has largely and will increasingly supersede brickwork building

in the circumstances to which it is peculiarly adaptable. That it will ever wholly supersede brickwork we neither believe nor desire. The two systems, we feel perfectly confident, will exist coevally as long as man requires huge business premises and comely habitations; and he who aspires to be a complete builder will not be so foolish as to take sides in an unholy war between the two systems—for that way madness lies—but will wisely avail himself of every opportunity of turning both to his advantage. Hence we deprecate any and every attempt to exalt one at the expense of the other. There is room for both; and a mere partisan attack on the newer but no longer novel method is curiously behind the times, considering that, to mention only two most significant facts, the London County Council has not only procured an Act of Parliament sanctioning its adoption but is actually teaching its principles and practice at the Brixton School of Building; while the Government Departments have given the most convincing proofs of their confidence in reinforced concrete construction.



REINFORCED CONCRETE BRIDGE. MOORTOWN ROAD

(Particulars on next page.)

COLOURING AND WATER-PROOFING CONCRETE.

The colouring of concrete, which has been a very perplexing problem, is, like the other uncertainties that have attached to concrete construction, gradually becoming simplified and certain. At the same time, the demand for artistic and satisfactory exterior colour treatment has become very general, at all events in the United States, owing both to the uncertainties of tone produced by the natural concrete and its variation, and to the cold and cheerless monotony that prevails where a large number of concrete buildings are grouped together.

The experimenters in concrete colouring have, says Mr. March G. Bennett, in the "Cement Age," groped and tested for years, with many failures and few successes, but the failures have been almost as educational as the successes, and the natural result is a much more definite and clear idea of the requirements than ever before. Probably the first attempts at colouring were made by mixing ordinary mortar colours into the concrete or plaster. Occasionally this was successful, but in the vast majority of cases the colouring was patchy and uneven, and off shade. It is almost impossible to make a good even tone by such mixing. Another fundamental objection to this method of colouring is that it certainly weakens the bond to a greater or less degree, and engineers and architects are agreed that even the slightest weakening by such a mixture is objectionable. The next method was by the use of ordinary paint, but the alkali in the cement promptly put an end to this, because the almost universal result was destruction of both the colour and the fixative, causing the compound to fade, and the surface to peel off.

Then came the special coatings, compounds that avoid weaknesses of paint, but which are essentially painty in their character and form a thick coating over the surface of the cement, entirely covering it up, and substituting the colouring material for the cement surface.

In cases where colour only is desired, and texture is of no consequence, these coatings have proved quite satisfactory, but for those who desire to preserve the natural texture, and at the same time to get an artistic colouring effect, such a material will not be satisfactory. The problem is precisely the same as that of woodwork, so far as artistic value of the results is concerned, and those who prefer the smooth even surface of a heavy paint will find the cement paints or coatings satisfactory, while those who prefer the transparency, and depth, and softness of the stain effect will not be pleased with anything that is opaque and painty.

Therefore, it is this large and increasing group of cement users that the cement stains have been designed to please. The stains are transparent, and colour the surface of the concrete without covering it with a thick coating like paint. They sink into the pores and preserve the natural texture of the cement almost as completely as though nothing had been applied, while at the same time colouring it in rich, deep tones that are infinitely more artistic in their character than any opaque coating can be. Many other advantages are claimed for stains as compared with all other colouring agents for cement work. Prominent among them are the ease and rapidity with which they can be applied. Any intelligent workman can apply them, using a broad flat brush, and doing the work more than twice as quickly as a heavy painty material can be put on. Then, they

cover from twice to three times as much surface per gallon as the heavy paints, and their original cost is very much less. This makes the job more economical in every item, but in addition to this it is maintained that the wearing qualities of the stains are much more satisfactory than those of any other colouring agents. The fact that they do not form any skin or coating over the surface makes it impossible for them to crack or peel off. They, therefore, grow gradually softer with age, and the result of this is so agreeable that many users are contented to let them stand for many years without renewing. "Growing old gracefully" is one of the phrases used in setting forth the merits of these compounds.

But, in addition to these colouring advantages, the stains waterproof the surface completely and permanently. The vehicle contains an indestructible waterproof compound, which enters and seals the pores of the concrete, and as it does not oxidise by age, this waterproofing effect lasts for all time. In this respect, of course, the stains have an argument that cannot be used in favour of the coatings, none of which claim to be really waterproof. The waterproofing ingredient used in the stains has been tested upon actual work of various kinds for more than twenty years, and has thoroughly demonstrated both its efficiency and its permanence.

Vice-Consul A. A. Williamson quotes from a Manchurian paper the statement that "an official of the South Manchurian railway has, by dint of application, invented a new use for soya-bean oil as material for preparing a waterproof liquid which is pronounced by the experts of the Dalny central laboratory of that line to give greater durability at a cheaper cost."

THE ADAPTABILITY OF CEMENT.

With reference to the Cement Exhibition recently held in Madison Square Garden, New York, the editor of the "Cement Age" said that visitors from a distance will find at every stage of their journey increasing evidences of the multi-fold uses to which the product is being put. They will cross viaducts and bridges of reinforced concrete; they will see water tanks of cement; there will be an occasional suburb in which there is a colony of neat "poured houses," almost as if they had been hewn out of solid blocks of cement; barns and cribs with cement floors will be found all along the routes. As they cross the ferry from Jersey City they will see, jutting out along the waterfront, the magnificent new docks of the city of New York, built of concrete and steel. They will ride through the concrete subway, walk on cement sidewalks, and sleep in fireproof hotels built of reinforced concrete.

Mother Invention has been active in causing the civil engineers and the architects of the 20th century to develop the possibilities of this artificial compound as our supply of timber rapidly decreases. The initial high cost of granite and sandstone, as well as the difficulty of handling large blocks of the heavy material, has caused builders to use cement wherever possible. The relative superiority of the higher grades of Portland cement over all the cheaper grades of brick has brought about an ever-increasing popularity of the artificial compound which was invented by an Englishman—Joseph Aspdin—in 1824. This manufacturer from Leeds took out a patent on a cement which he made by calcining a mixture of limestone and clay. He gave the resulting product the name of "Portland" because of a fancied resemblance between the set cement and the famous limestone at that time extensively quarried for building purposes at Portland, England. The name has adhered because the product looked like Portland stone, and not because it originally came from Portland. As a matter of fact, there never has been a cement manufacturing plant at Portland, England; Portland, Oregon; or Portland, Maine.

The most gigantic project for which American Portland cement has ever been used is, of course, the Panama canal. In this work it is estimated that 8,000,000 cubic yards of concrete will be used, chiefly in the construction of the six mammoth locks, in duplicate, 1,000 feet long and 110 feet wide, two of which will be $41\frac{1}{2}$ feet deep and the other four 30 feet. Concrete also will line the great spillway of the artificial lake at Gatun. The contract for furnishing this enormous amount of cement was let after open competition. Most of it is being made in Northampton, Pa., and is being shipped through Jersey City. The contract calls for 4,500,000 barrels of cement, and not more than 10,000 nor less than 2,000 barrels per day must be ready for shipment.

The great dam which is to be thrown across the Mississippi river just below the rapids at Keokuk, Iowa, is exceeded in size only by the great Assuan dam across the Nile. This American dam will require 500,000 barrels of cement and 7,000 tons of structural steel. It will be 37 feet high, seven-eighths of a mile long, and 43 feet thick at the base. When it is completed the dam will enable the harnessed "Father of Waters" to supply 200,000 horse-power to a territory which will embrace St. Louis, a distance of 170 miles to the south.

Cement has been put to an entirely different use at Cambridge, Mass., where it was the material selected for the Harvard stadium, an enormous structure seating 40,000 people, which was built at a cost of 475,000 dollars. This is the largest athletic arena of its kind in the United States. Last summer a similar structure of cement and steel was completed in Tacoma, Wash., and presented to the city. It is a stadium seating 30,000, and will be used for high school athletic and similar events. The cost of 130,000 dollars was met almost entirely by popular subscription.

The steel and concrete steamship docks which have recently been completed in New York harbour at a cost of 10,000,000 dollars demonstrate how well cement lends itself to decorative architecture. There are nine of these piers, seven double and two single, and their substantial architectural lines, as well as their pleasing yet unobtrusive ornamentation, are in striking contrast to the old docks which were an eyesore along the river front so many years. The initial cost of 10,000,000 dollars was not so great when it is remembered that the city is receiving an annual rental of 565,000 dollars from the steamship lines using the docks.

Except in such cases as the one mentioned above, cement has played only a small part in decorative architecture up to the present time, but after the successful moulding of a colossal statue of an Indian in Illinois, it would be unsafe to say that the greyish powder will not in the future be adapted to artistic uses. This statue is of Blackhawk, chief of the Sacs and the Foxes. It is 48 feet high, and stands on a rocky bluff 250 feet high, near Eagle's Nest across the river from Oregon, Ill. The artist was employed for three years in its construction, but he believes that he has created a work of such enduring art that it will be in existence long after the Egyptian sphinx has crumbled into dust.

The United States Department of Agriculture recently gave a great impetus to the cement industry by issuing a bulletin setting forth the truly startling losses suffered by farmers, grain merchants, and others through the depredation of rats. This bulletin gives in detail plans for laying cement floors to all barns, corncribs and cellars. A national warfare is to be waged against the rodent, not only because he is a ravenous feeder and exacts an annual toll of millions of dollars worth of farm products, but because as a spreader of disease and epidemics he is a paramount pest. The ravages of the bubonic plague are said to lie solely at the door of the rat. The cement floors, making impossible any ingress to the grain bins, will, it is believed, effectually check the career of the tiny but terrible devastator.

The cement or "poured" house is gradually attracting attention throughout the country. These houses are made by erecting steel or iron moulds and literally pouring them full of "house." When completed the building is fireproof, absolutely sanitary, and can be washed out with a hose. Many big manufacturing concerns which require numerous small houses for the use of their factory hands, are considering the advisability of adopting the "poured" house as an economic move. Where a number of dwellings are to be poured in the same locality the cost is materially lowered, as the taking down and setting up of the mould more than once is avoided, it being possible to move it from lot to lot intact.

In the Far West, where so many irrigation projects are being fostered, cement is being put to even more uses than in the eastern States. The largest fence in the world has recently been built in one of the Rocky Mountain States. It is 7,400 feet long, 8 feet high, and 4 inches broad at the top. Cement telegraph and telephone poles have been used successfully, and have met with some favour. Heretofore, the railroads have been unable to make use of the concrete tie in railroad construction, because they found it too rigid for long service. Recently, however, it is asserted that George Gates, of San Jose, Cal., has sold to a syndicate of eastern railroad men for 17,000,000 dollars the patent right for a process of concrete tie-making.

In all cases where compressive rather than tensile strength is required, cement has been found to be highly satisfactory, the comparative resistance to forces of compression and tension being 10 to 1. Five years ago one barrel of cement was used to every 1,000 feet of lumber. To-day there are 16 barrels used to every 1,000 feet. It is estimated that for the year ending December 31st, 1910, 75,000,000 barrels of cement will have been used. And the cost has decreased with the increase in demand. In 1880 the manufacturer received 3 dollars a barrel for his product. Last year the average price was 81 cents.

Cement is made by heating a mixture of lime, silica, and alumina in certain fixed proportions to a point of incipient or semi-fusion. After the burning process the resulting "clinker" is finely pulverised, and carefully protected from moisture until ready for use.

Tests recently conducted by the United States Government at Sandy Hook have proved the adaptability of concrete for the construction of walls for fortifications. Twelve-inch projectiles were fired into concrete walls 22 feet thick, at a sufficiently high velocity to pierce 22 inches of steel, and while the shell went through the wall, the results were so gratifying that the Government is now considering the advisability of using this material in the new coast defence works in the Philippine Islands.

MOORTOWN ROAD BRIDGE.

The reinforced concrete bridge at Moortown Road, illustrated on the preceding page, was constructed by Messrs. the Cubitt Concrete Construction Co. of London. The span is 36ft., with 20ft. 6in. between the parapet walls. The maximum rise is 6ft. 6in. from the springing to the intrados. There are four ribs of parabolic form with 6in. slab spanning between, the filling for the haunches being placed on this slab, and the thrust of the arches taken by counterforts behind the apron wall. The bridge was tested with two 10-ton rollers standing side by side in the centre, and showed a deflection of 1-64in. on the main ribs, returning to the normal condition immediately on the removal of the load.

A Burst Water Main.

On Saturday of last week, a huge high-pressure water main over 12ft. in circumference, which conveys water from the works of the Metropolitan Water Board at Long Ditton to the southern district of London, suddenly burst with a loud report at a spot about halfway up Kingston Hill. The force of the water was so great that large paving stones were hurled a considerable distance, and part of the adjacent tramway track was torn up.

FEDERATION NEWS.

Barnoldswick.

The fifth annual dinner of the Barnoldswick and District Master Builders' and Kindred Trades Association was held at the Railway Hotel on December 23rd, 1910, when a large company was present under the chairmanship of Mr. L. Robinson.

The second toast, "Town and Trade," was proposed by Mr. J. Harrison, who said that, generally speaking, the trade of the town had been good.

Mr. P. Barrett, responding, said that a town could not prosper unless it was healthy and vigorous, and they as builders had a great deal to do with that prosperity, and it was to their interest as builders to erect healthy dwellings.

Mr. R. S. Windle, in proposing the toast of "The Association," regretted that the society was diminishing in membership. Mr. Ed. Smith, responding, said that the association was in a good financial position.

King's Norton and Northfield.

In presenting their annual report for the past year, the Committee of the King's Norton and Northfield Urban District Master Builders' Association state that there have been held during the past year nine committee meetings and ten ordinary meetings, also a well-attended open meeting held on September 8th last, when the Finance 1909-1910 (Act 1910) was discussed with the object of obtaining an interchange of opinion to enable members to interpret the questions asked in Form IV. by the Inland Revenue Authorities.

This association has become affiliated with the Birmingham Building Trades Employers' Association, entitling two members to sit upon their Conciliation Board in the event of dispute with operatives within a five mile radius. The President has attended the meetings of that association, and reported thereon at subsequent meetings.

A deputation consisting of the President, Mr. McDonald, and secretary, waited upon the Building Committee of the King's Norton and Northfield Urban District Council on March 22nd last, with recommendations for modification of some of the new bye-laws, the outcome of which conference was considered satisfactory.

A joint meeting of operatives and members was held on June 2nd last, respecting the inclusion of the fair wages clause in contracts entered into by the King's Norton and Northfield Urban District Council and the Worcester County Council. A correspondence ensued, and ultimately this association was assured that contracts entered into by the former Council contained this clause.

On June 23rd last an instructive and interesting paper was given by a member, Mr. W. J. Masters, upon "The Housing and Town Planning Act."

The annual dinner was held on February 3rd last, at the Exchange Restaurant, Birmingham.

The annual outing took place on July 13th last, the party visiting Oxford, where the principal colleges, churches, buildings, etc., were inspected.

As heretofore, the association has been loyally supported by the honorary members, and the members are earnestly requested to observe the inter-trading rule.

The report is signed, on behalf of the Committee, by Mr. Harold Grice, President, and Mr. H. H. Copeland, Secretary.

Middlesbrough and District.

The annual general meeting of the Middlesbrough and District Building Trades Association was held in the Corporation Hotel on Dec. 13th.

In the unavoidable absence of the president, the chair was taken by the Vice-president, Mr. W. S. Davison. There was a record attendance of members.

The hon. treasurer, Mr. Percy Bray, presented the financial statement, which showed that the association had more than paid its way during the year. There was a profit on the year's working, which, added to the balance brought forward from last year, and the amount on deposit, made the financial position of the association a very good one.

The report and balance sheet were adopted.

The secretary reported that during the year the association had held its own numerically. Several had for various reasons ceased to be members, but others had taken their places. The year had been a quiet one, our relations with the employees were good, and there had been no labour troubles. A few months ago it seemed as though the Conciliation Board would be called upon to consider a question of demarcation; but, happily, an informal conference had settled the matter. Good relations with the architects had been sustained. Two or three years back the quantity rule and intertrading rule involved much correspondence, and many interviews, but personal contact and the working of the rules had made for a better understanding. The trade during the year had been very moderate; in consequence, competition had been keen. We need a boom in the building trade to make us forget about the cutting of prices.

The executive meetings of the association had been very well attended, and there was also better attendance at the monthly general meetings; there was still room for improvement in respect to the general meetings, and the committee urge upon the members, both in their own interest and in the interest and in the interest of the association, a regular attendance at all its meetings. The report was adopted.

The following officers were elected for 1911:—President, Mr. George Hudson (Messrs. Hudson Bros., builders and contractors, Middlesbrough); vice-president, Mr. W. Masters (Messrs. Masters and Binning, plasterer contractors, Middlesbrough); hon. treasurer, Mr. Percy Bray (builder and contractor, Linthorpe), re-elected; secretary, Mr. Walter Rigby, 32, Newlands Road, Middlesbrough (re-elected); executive committee, Messrs. W. S. Davison, E. Baker, S. Coates, T. Wilkinson, H. McNaughton, W. B. Robinson, H. Doughty, T. Metcalfe, J. W. Vinter, G. Sherriff, and the officers; representatives Tees-side Federation Committee, Messrs. G. Hudson, W. Masters, P. Bray, H. McNaughton, W. S. Davison, T. Wilkinson, J. W. Vinter, W. B. Robinson, H. Doughty, E. Baker; representatives Northern Counties Federation, Messrs. G. Hudson, W. Masters, P. Bray, H. McNaughton, W. S. Davison, T. Wilkinson, J. W. Vinter, W. B. Robinson, H. Doughty, E. Baker.

The levy was fixed at 3s. 6d. per £100 wages paid.

A notice of motion in reference to slaters' subscription was on the agenda, but it was decided to let the rule in respect to this stand as at present.

It was decided to hold the next meeting in February.

After the meeting a smoker was held, Mr. Geo. Hudson (president) in the chair. There was a large attendance of members and friends. During the evening, opportunity was taken of presenting the secretary, Mr. Walter Rigby, with an oak side-board, and Mrs. Rigby with a gold brooch set with pearls and turquoises on the occasion of their marriage.—WALTER RIGBY, Secretary.

Sunderland.

The annual dinner of the Sunderland and District Building Trades Association, took place at the Grand Hotel, Bridge Street, on December 15th. There were present altogether 60 members of the association, and friends. Mr. J. Morice Wright (president of the association) presided, and there were also present the Mayor (Ald. Sanderson), the Town Clerk (Mr. F. M. Bowey), Mr. S. Smethurst (president of the National Federation of Building Trade Employers), Mr. A. G. White (secretary of the National Federation), Mr. John W. White (senior vice-president of the National Federation), etc., etc.

Mr. J. M. Gibbons proposed the toast "The Mayor and Corporation of Sunderland and other governing authorities," and the Mayor responded.

Mr. W. T. Weir proposed the toast of "The National Federation and the Northern Counties Federation of Building Trade Employers."

Mr. S. Smethurst, President of the National Federation, in responding, paid a high tribute to the services rendered by Coun. W. H. Hope to the Federation, and said the National Federation had become a very important body. It represented in all the large centres of population nearly all the important builders, and it was performing very useful functions. As it grew in strength and influence it was being appreciated by all the outside authorities in a way it was not eight or ten years ago. The Government Departments now consulted them on all matters pertaining to their trade. When the Federation came into existence first, they had to deal with working people, who were fairly well organised eight, ten, or fifteen years ago. They were so well organised, in fact, that they could impose their will on the building trade. The result was that very oppressive and restrictive conditions were brought into existence. The recognition by the trade unions that the building trade employers had become well organised had, however, made them more reasonable. He had, he said, always found architects eminently fair, but a tradition had grown up that gave them an authority that he did not think impartial men would deem fair. What they wanted and what he thought they would get by common consent would be the recognition of what was just and fair, so that those inequalities would be done away with.

Mr. A. G. White, secretary of the National Federation, proposed the toast of "The Sunderland and District Building Trades Association." He remarked that he wished to bear testimony to the excellent and efficient way in which the business of the Sunderland Association was carried on. He complimented the association upon having a secretary of the ability of Councillor Hope. He mentioned that the Sunderland Association was going to send Mr. J. W. White next year as president of the National Federation. He hoped that Mr. White would have a splendid year of office.

Mr. J. Morice Wright, president of the association, responded.

The toast of "The Architects, Surveyors, and Engineers" was proposed by Mr. John W. White. Messrs. W. Milburn and J. W. Moncur responded.

Wigan.

The annual dinner of the members of the Wigan and District Building Trades Employers' Association was held at the Clarence Hotel on December 7th. Mr. Oswald Pilling, the president for the year, occupied the chair.

The President, in responding to the toast of his health, which was proposed by Mr. J. Smith, said he hoped that by the time of their next gathering they would all be in better spirits at the prospect of a revival in their industry.

Mr. Webster proposed the health of Mr. J. W. Bywater, the vice-president, who responded.

Councillor J. Walkden proposed the health of Mr. Dawson, the hon. treasurer.

Mr. R. G. Dawson, in acknowledgment of the toast, said that they were one of the finest associations in the Lancashire and Cheshire Federation, and he was proud to hold the office he did.

Mr. James Howard, who was called upon to propose the toast of the town and trade of Wigan, said that for the success of trade both masters and men find out the best way to advance the prosperity of the place they were living in. He thought they had a notice in for the advance of wages from the joiners now. A more inopportune time could not have been chosen. They had no trade in the town, and the contractors had to go to other districts to find work for their employees; they had to go to places where there was a much lower rate of wages. If the building trade of Wigan had to be carried on to any extent by competing with outsiders, they themselves would see that it was not a time for advance of wages. The masters had struggled manfully, and had very adverse circumstances to deal with, and they had never given notice for reduction of wages only as a counter notice. There was another little thing about the employees. The men they could not obtain work for were found doing work for property owners and others on their own. Whilst he said that they were perfectly right to earn an honest living, still they were breaking a compact between employers and employed. They pledged themselves not to work for any except a legitimate employer who had a shop with a rateable value. They were breaking their compact in that, as anyone could see in walking about. There was another injustice that they perhaps did not feel that they were doing their employers, that whilst these men had no rates to pay for their shops and no upkeep for their works, if they were working for an employer the work would be done, and they would be getting the same wages. They were acting to the detriment, not only of themselves, but of the master builders of the town.

Alderman Dickinson acknowledged the toast.

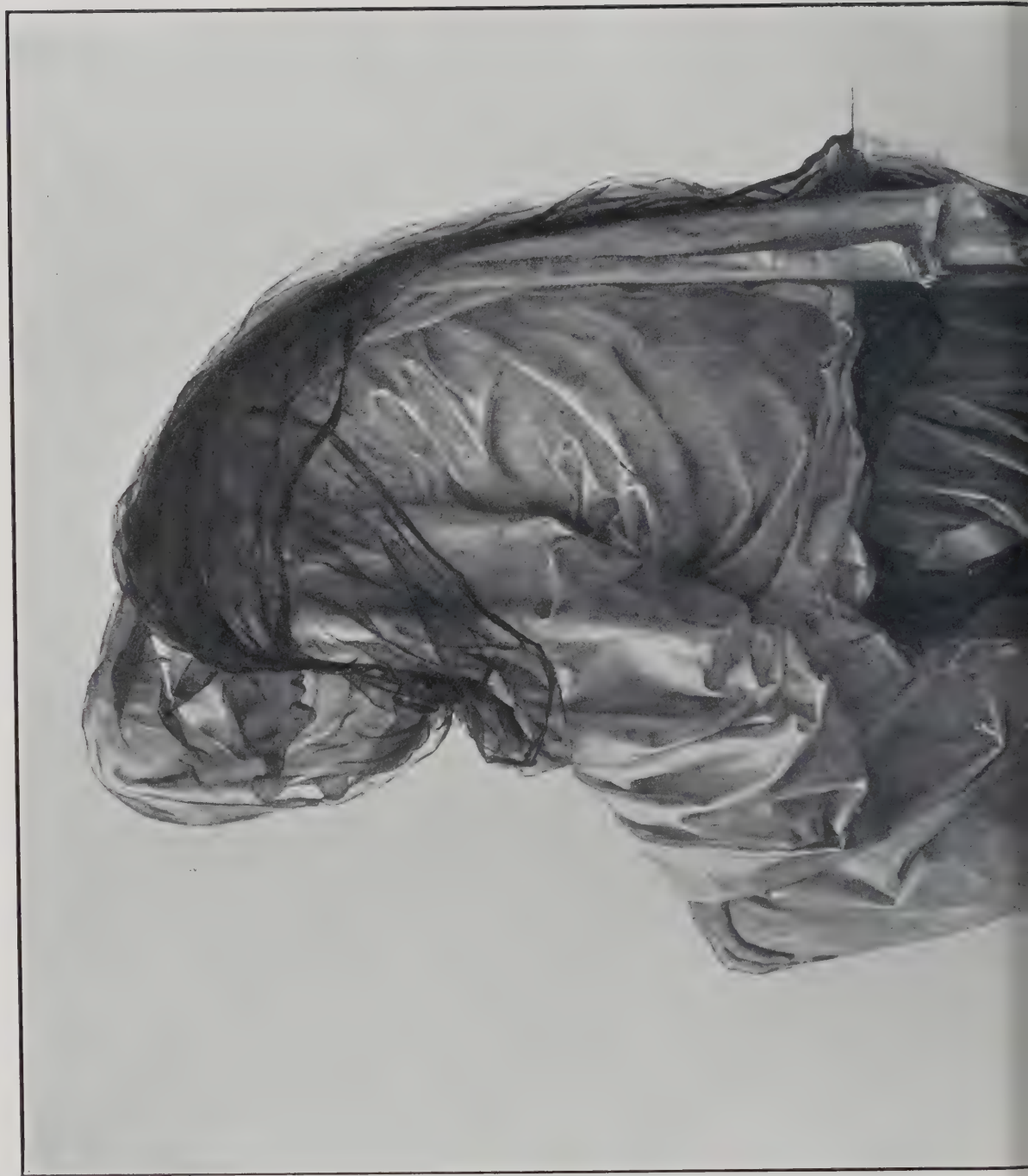
Mr. Wm. Johnson proposed "The Wigan and District Building Trades Employers' Association." He said he thought they could congratulate themselves upon being a successful organisation. There was no doubt that so long as things were as they were a considerable portion of the business of an organisation such as theirs would be to deal with notices for alterations of wages, and working rules, but there were other matters which to his mind were equally as important which in the past had not received the attention from builders' associations they ought to have done. They all knew that the whole trend of modern legislation was in the direction of putting handicaps and restrictions upon the conditions under which they carried on their business. There was a Bill introduced about two sessions ago which, if it came into operation, would make the building trade a considerably more difficult one than at present. It was a Bill to regulate the conditions under which buildings in course of erection had to be conducted, and a Bill that would affect every branch of the building trade in a very acute degree. It was put on one side because of the Budget, but he would not wonder if in future something of the kind would be passed. They would have Government inspectors going about from shop to shop, and they only needed to think of the carelessness of men in carrying out instructions given to them to recognise that there would be serious trouble for any builder if that act came into operation. He named that as an inducement to the young builders to take an interest in that association, because it was only by being organised that they could get anything like fair play. There was another matter, which was in respect to the architects. In Wigan they were on very good terms with their friends the architects, but there was one clause in every contract agreement, with regard to the retention money which they regarded as unfair. They all knew the length of time that elapsed between the completion of a building, and the clearing up of an account for the building was very much longer than used to be, and retention money remained without any interest being paid on it. The National Federation of Building Trades Employers were trying to come to terms with the Royal Institute, to insert in each contract agreement a clause that from the time of the completion of the building, or when the building was taken possession of, interest should be paid on the retention money. They would agree with him that that was a perfectly fair proposal.

Mr. Neville, M.P., and Councillor Glover, also spoke.

London Water Supply.

At an estimated cost of £6,900,000 the Metropolitan Water Board propose to construct extensive works in Buckinghamshire and Middlesex for the improvement of the London water supply. In addition the text of the Parliamentary Bill promoted by the Board includes provision for the execution of works under the general powers of the Board at an estimated cost of £1,000,000. The work to be done includes the construction of ten storage reservoirs—at Wyardisbury, Horton, Stanwell, Laleham, Sunbury, Wembley, and Staines—with necessary conduits and aqueducts. The water for service will be taken from the Thames and Colnbrook.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, January 11th, 1911.





ROYAL ACADEMY PRIZE CARTOON OF "A VEILED FIGURE SUGGESTIVE OF 'SILENCE.'" BY MARGARET L. WILLIAMS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 11th, 1911.

Volume XXXIII.

No. 833.



CENTRAL LIBRARY, NELSON: VIEW OF HALL FROM VESTIBULE.
JOHN R. POYSER AND W. BRANDRETH SAVIDGE, ARCHITECTS.



A good example of modern French architecture in Paris.

NO. 6 AVENUE DU BOIS DE BOULOGNE, PARIS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JANUARY 11th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 833.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

The Ruislip Competition.



THE competitive designs, sixty-two in number, which have been sent in for the laying out of the Ruislip Manor estate near Northwood and Pinner, have been on view this week in the large room at the Alpine Club. As stated in our last issue, the three premiums have been awarded, in order of merit, to Messrs. A. and J.

Soutar, Mr. George Hornblower, and Mr. H. R. Gardner.

The land to be dealt with has been sold by the Provost and Fellows of King's College, Cambridge, to "Ruislip Manor, Ltd.," on terms which, we are told, "will make it possible to plan and build a modern suburb for London on the most generous scale of town planning, with every amenity which new standards of housing demand." Railway access from London is ample and convenient. The spirit in which the Ruislip Manor Company are entering on the work may be stated in the following quotation from their prospectus:—

"The object of the company will be to develop the estate in accordance with those modern lines of development to which the term Garden Cities has been applied. All who are interested in the housing problem recognise that it is not enough merely to build houses which are structurally sound, and provide the minimum light and air spaces necessary to comply with the bye-laws. Something more is needed if the dull monotony of our suburban areas is to be done away with, and the lives of the inhabitants made pleasant and profitable. It is essential that playgrounds and other open spaces should be provided, and that everyone should be given the opportunity of having a garden of his own. Further, the directors are strongly convinced that new suburbs need not be divided into workmen's cottages on the one hand and villas on the other, in the way mostly adopted hitherto, but may be made to resemble our older towns and villages in being the homes of more or less organised communities; and they are still more firmly assured that such suburbs may, by careful planning, be made in their way as beautiful as an old cathedral town or the most picturesque village."

With all this we agree, except in regard to the idea, which has been promulgated also at the Hampstead Garden City, that it should be an object to mix the higher and lower class of dwellings, instead of having a quarter for villas and a quarter for cottages; and thus to make what is called an "organised community." What is precisely intended by this latter phrase we do not exactly understand; it appears to us that an estate laid out on that principle would be not more but less "organised," than one in which different classes of dwellings were separately grouped. The idea of mingling the dwellings of the richer and the poorer classes may seem very beautiful in theory, but it is contrary to our usual habits of life, and our impression is that the poor do not like it any better than the rich, and that they prefer to live among those of their own standard of living; and it is quite certain that most of the class who would pay the higher rents for the larger houses would also prefer to live in a quarter specially devoted to their class of residence. The point is of some practical importance to the company, for they may find the letting of the better class of houses impeded by this "organised community" arrangement, which they will find will not be generally acceptable.

The land to be dealt with is two plots, one of them a long rather narrow and irregular plot, nearly three miles long, the main axis of which runs northward, but rather west of north; the other is an approximately oval plot, about a mile long, the major axis of which nearly continues the major axis of the longer plot; the two plots are separated by some open fields, and the expanse of the Ruislip reservoir, practically a small lake about three-quarters of a mile in length. The land is rather suggestive for planning, as there is a general trend of the axial line in one direction, and the two plots, disconnected as they are, suggest a separate treatment.

Dealing with a site which is long and narrow, as the main plot is, it should obviously be an object to emphasise its longitudinal direction, to make use of this for long vistas, and not to break it up by too much cross treatment, which would interfere with the effect of its length. Moreover, an average north and south line for the direction of roads gives the best opportunity for light, east and west, to the houses flanking the roads. This principle is very well carried out in the first premiated design, which we reproduce, and which is one of the best plans for laying out building land that we have ever seen. The authors have a fine and effective backbone or central axis to their plan, and the longitudinal and northward tendency of the collection of roads is well maintained, so that the whole plan seems to lead up to a culminating point, and churches and other important buildings are effectively placed at the end of vistas. Above all, what we are glad to see is that there is none of that serpentine planning of roads in quasi-natural curves, which is supposed to be picturesque, but only betrays a want of purpose in planning. In this respect the plan is an immense advance on Letchworth, which in its main lines can hardly be said to be planned at all. The junction with the road leading off to the smaller plot is well managed by a circular lawn and road on which the road of communication hinges; and in the smaller plot itself we may notice the admirable placing of the two churches, facing each other at the ends of an avenue half a mile long. It will be seen, on looking over the plan in detail, that there are many points at which good architectural effects may be obtained. The only thing that seems rather doubtful, in a practical sense, is the position of the market, at the south end of the site. If this is a market for the general supply of the inhabitants, it would surely have been more convenient to place it in a more central position. We presume that the spot about the centre of the long plot, marked "Windmill Hill," is the highest point of the ground. The authors of the first premiated design have utilised it as the position of a reservoir.

Mr. Hornblower's plan (which we have reproduced side by side with Messrs. Soutar's) also preserves a good central axis, and is a good plan, but not open to so many effects in detail as Messrs. Soutar's, nor is it quite so comprehensive and unified in its general scheme. Mr. Gardner makes his principal axis run due north, which does not express the general trend of the ground; there are good points in it in detail.

In the general assemblage of plans we certainly did not find anything much to admire; the response has been a good one in point of numbers, but there is more quantity than

quality; many of the plans seem to amount to little more than an aimless scrawling of roads over the ground, and they are in many cases so badly got up and coloured that it is not easy to see what their authors actually intended. Among the few which show some definitely worked-out ideas is that by Mr. W. H. Thorp, of Leeds, who rather favours a scheme of taking large quadrangular plots for special laying out, with an oval space in the centre. Messrs. Cash and Starmer Hack show a grand central boulevard in a straight line from end to end of the large plot, with a fountain basin at each end of it, which reminds one of the Neuilly Avenue in the western suburb of Paris; this would have a fine effect. Mr. Ashbee's general plan is one of those which do not explain themselves, and it has rather the appearance of being unfinished, but he has made an effective treatment of the Windmill Hill centre as a circular garden, and shows a good bird's-eye perspective of it.

There can be no doubt that the first premiated design is decisively the best; it is really quite a work of art.

The Institute of Architects.

SIR HENRY TANNER'S paper at the Institute last week drew, as is not surprising, an unusually large audience. The fact that this was the largest work yet carried out in reinforced concrete naturally attracted many of the younger members of the profession, who hoped to get some useful information in regard to the practical working of the system on a great scale. The walls were covered with working drawings of various portions of the construction, which could be inspected before and after the reading of the paper, in addition to the illustrations by lantern views. It would have been useful, however, to have had some of the constructional diagrams photographed as slides, so that they could have been visible to the whole of the audience along with the description of them in the paper. The lantern illustrations were rather too much in the way of scenic photographs, showing in perspective the building in different stages of the work. Illustrations of this kind, which are often given in illustrated papers in connection with similar work, are more calculated to interest the "general reader" than to convey precise information.

An inspection of the interior of the building as now completely finished and in working order makes it evident that as an adaptation of reinforced concrete to the construction of a great working establishment, it is a brilliant success. Every detail in plan and arrangement seems to have been carefully thought out, and one cannot but be struck by the immense saving in space, both laterally and vertically, by the use of a material which can ensure adequate strength with such thin sections, and the general effect of neatness and efficiency combined. All this, of course, is not architecture in the higher sense; it is building—very efficient and practical building, but still no more than building. We quite agree however, in Sir H. Tanner's position, that the object in such an erection should be to produce a building exactly suited to its purpose, and let the architecture be adapted to that; and not to make an architectural design and fit the interior to it.

The architectural question remains, however, and is not solved in the new Post Office building, where the exterior architecture has no connection with the construction, except in regard to the clever way in which part of the weight of the masonry covering is carried on cantilevers in the upper portion of the building, so as to relieve the weight on the lower portion of the rather thin stone walls, besides acting as an efficient bond between the reinforced concrete and the stone covering. But this stone exterior has no architectural relation to the structure, and is only a rather ordinary application of features of Renaissance architecture. The higher note in the discussion was struck (as it often is) by Professor Pite, who hoped that in some such building in the future the reinforced

concrete construction would be carried through to the street and treated architecturally on a basis of its own. It would hardly be reasonable to expect that an architect of an official department, mainly occupied in producing an efficient building for a great branch of public work with as little delay as possible, should have had, or would even have been allowed, the time to consider and evolve a new architectural treatment of reinforced concrete—one of the most difficult architectural problems possible. But it ought to be done, and we are inclined to suggest that in another similar case it would be well to invite some architects outside the Office of Works, who have specially given their attention to artistic problems, to suggest designs for the exterior treatment. Two conclusions in regard to this subject may be laid down as absolute: (1) Crude concrete cannot be left as an outer wall, uncovered; it has too rough and unsightly a surface; it must be treated (in the materialistic sense) in some way; (2) any attempt to find the true architectural expression of concrete must be prepared for by the architect disembarassing his memory entirely of orthodox masonry detail, which is the expression of a material and a constructional method entirely different from reinforced concrete.

As a small matter of arrangement, it would be more businesslike, when lantern views are to be used in illustration of a lecture, that the screen to take the views should be in place beforehand, instead of the audience having to wait while it is let down in the middle of the proceedings.

Workmen's Compensation.

A VERY able article in the "Times" of December 29th reviews at considerable length and with great acuteness the present position of workmen's compensation in this country. The writer, who takes special account of the medical aspect, thinks that the principle of compensation is too firmly established to permit of any change except in the way of further extension. Changes must come, and probably they will come soon; but the writer thinks that they may be reasonably expected to follow scientific lines; and he believes that expansion, especially if combined with wider insurance out of a fund to which the workman himself contributes, might relieve, rather than multiply, "the burdens that at present alarm capital and hamper industry." He recognises that "the medical question is the key to the whole subject; the sifting of claims, the matter of *bona fide*, the complication of accident with disease, or the confounding of accident with disease, the duration of disability, its permanence or its limitation by treatment; these and many other matters complicate the discussion of individual liability and of the general application of the Act." He cites cases in which "an emphatic and possibly ill-informed witness combines with the benevolent judge to do a cruel injustice to the employer or his insurers." Again, "it is too often the case that workmen who are out for a lump sum settlement obstruct or neglect such treatment as would speedily restore them to work with undiminished competency; e.g., a man with an injured joint will deliberately permit adhesions to form and become organised, because he is obsessed with an extravagant idea of the compensation to which he is entitled." It is further declared that (as, we fear, many building trade employers could feelingly testify) "Many men will not attempt to work until they have been bought and paid for; they nurse symptoms and cultivate indisposition until the compulsion of the Courts, or the payment of a large sum of money, removes the premium on loafing. There is no difficulty in persuading the imbecile or dishonest doctor or lawyer to push speculative cases in Court, and they rely on the natural disinclination of judges to risk injustice to a workman whose livelihood is in jeopardy." He suggests that a workman should be compelled, as a condition of compensation being continued at full or partial rates, to produce a certificate that he was submitting to regular treatment to the satisfaction of an independent medical man,



THE NEW UNION GOVERNMENT BUILDINGS, PRETORIA, SOUTH AFRICA. HERBERT BAKER, F.R.I.B.A., ARCHITECT.

when the employer would probably be freed from the limitless liability of septic and preventable influences on wounds. Equally strong views are expressed as to the frailty not only of workmen, but of doctors and lawyers, in making the most of their opportunities for putting the screw on employers and insurance companies. The writer, however, is by no means narrow or bitter in his observations, but, on the contrary, appears to take a broadly humane view of all the points to which he directs attention. Thus he is very compassionate not only towards the employer who suffers in pocket from avoidable conditions, but to the workman who is physically the victim of the lack of proper organisation for the more economic administration of the Act. The patient should not only be more closely watched, but more efficiently treated and more quickly and effectively cured. At present the means for securing both these eminently desirable objects are sadly to seek, to the detriment of both master and man, with the result of much needless suffering on both sides, and of much waste of money, energy, and even life. We think that the National Federation of Building Trades Employers might very reasonably, in the interests of all parties, press for a Royal Commission upon the whole subject; and in furtherance of this object, they would probably obtain the support of the workmen's organisations, as well as of the combinations of employers in other trades; because, as the writer in the "Times" has so clearly and convincingly shown, the workmen are themselves as deeply concerned as the employers in placing the whole subject of workmen's compensation on a broader and more equitable basis. But the necessity for adopting a reasonable and conciliatory attitude cannot be too strongly emphasised.

The New Union Government Buildings, Pretoria.

THE new Union Government buildings at Pretoria are being erected on Meintjes Kop, which has been described as "an ideal Acropolis for a capital city." From the main axial line, with an inner radius of 138ft., has

been struck a semicircular block 34ft. in depth and screened on its southern sweep with a colonnade the height of the two upper storeys. On either side extends a block with a frontage of 305ft., and a general breadth of 138ft., while the horizontal range of this hill-set structure of 915ft. is relieved at the internal junctures by towers. The curved section is approached on its northward side by a high-level road that gives immediate access on to the first floor, upon which most of the Ministers' chambers are placed.

At the most northerly central point is situated a twelve-columned circular porte-cochère, some 36ft. in diameter, from which, after passing over a low-level roadway, a great triple colonnaded vestibule is reached. This, which is entirely open northwards and southwards, is in many respects the artistic climax and grand view-point, which, some 45ft. above the tram-line on the southern frontage, commands a full view of the axial features in amphitheatre, lawn, and water-stretches, roadways, terraces, and steps (and ultimately of piazzas and gardens, rich with statuary and typical products), and beyond to as much of the country as may be seen from an altitude of 4,565ft. above the sea level.

Taking the public roadway as the base-line, the structure will have a height of 61ft. to the eaves, and of a further 12ft. to the ridge. Two clock towers of stone, 30ft. square, rise some 160ft. above the general roof-line, or a total height of 160ft. from the level of the public road at the northern frontage. From the apex of each tower will rise a bronze figure some 10ft. high.

The end blocks, 148ft. from the axial line eastward and westward, are described as being "somewhat H-shaped," the lateral portions measuring 235ft. by 138ft., with transverse ends 208ft. by 35ft. The terraces are 35ft. wide and 17ft. above the public roadway. The central court to each of the end blocks has an area of more than 2,000ft. Giving relief to masses of red freestone are, on the lower floor, double columns, single on face, of finely wrought but unpolished red granite, while on the upper floors are triple



CARYATID BALCONY, BOULEVARD HAUSSMANN, PARIS.
H. GOURY, ARCHITECT.

columns, double on face, in one instance with arches, and in the other with lintels. Sections of lofty balustrading are introduced in the plain walling. Granite is used to the extent of 14,000 cubic feet. Balmoral freestone forms the superstructure. It will be rough rock-faced to the height of the ground-floor window-sills, and for some distance above that it will be hammer-faced, with boasted dressings; while the main entrance porches will have finely boasted faces with chiselled mouldings and dressings. Nearly all the surface treatment will be done by hand. The roofing design is remarkable. By means of ridge-flats, equality of slope has been secured throughout. The roofing overhangs the wall face some 5 ft., and "the whole result is a tremendous simplicity, allied with a very full measure of purposefulness."

Internally and externally there will be a good deal of sculpture, £20,000 being devoted to this object. The contracts for the eastern and western blocks (Mr. M. C. A. Meischke) amount respectively to £310,500 and £312,000; and Messrs. Prentice and Mackie's contract for the central block amounts to £256,224. Mr. Herbert Baker is the architect.

Wren's Scheme for Greenwich Hospital.

IN a finely illustrated article on Greenwich Hospital in the January issue of the "Architectural Review," Mr. J. Farquharson sets down a great many facts about the building which are not generally known, and gives a broad idea of the development of the whole scheme. The adaptation of the buildings as a hospital arose out of the Battle of Hogue (1692). Such a scheme lay very near Queen Mary's heart, but during her life little was done towards the furtherance of the scheme. At her death William III. reproached himself for his persistent neglect of the Queen's wishes, and at once took steps for the conversion of King Charles's Palace at Greenwich into a retreat for seamen. A Commission was formed, and Evelyn, Wren, and two others were appointed to report upon the practicability of Greenwich Palace Grounds as a site for a hospital. The result was a favourable one, and Wren submitted several designs, one of which was accepted, and the work of building commenced forthwith. It may be mentioned *en passant* that these drawings are preserved in the Soane Museum. Wren's post as architect was an honorary one, as he gave his fees in lieu of a subscription to the building funds. The portion of Wren's design then commenced was a replica westwards of the already existing pavilion of the river front of King Charles's Block, and the attic storey to the whole of this elevation was added at the same time. Soon after this, the dome, colonnade, and north and south elevations of King William's Block were begun, and the work proceeded so rapidly that these parts were roofed in, the dome erected, and the building so far completed that by the year 1703 accommodation had been provided for forty-two patients. Again, in the year 1698 the building of Queen Anne's Block was proceeded with. Of this, the river front and the elevation facing the Grand Square are exact copies of the corresponding elevations of King Charles's Block, and are the only façades of this block built under Mary's supervision. By this time Wren had become old and infirm. He pleaded inability to fulfil the demands of the work imposed upon him, and resigned his position of architect. It was Wren's desire to replace the Queen's House by a high and beautifully designed dome over a chapel, and to continue the colonnades on both sides up to the chapel. As Wren himself says in a report: The idea of these extended colonnades was to afford shelter to the patients in going to and from the chapel, while at the same time they would gather up the reins as it were of the grouping of the lesser masses. Had these designs been carried out, Greenwich Hospital would undoubtedly have formed Wren's masterpiece. Unfortunately, however, Queen Mary vetoed the proposal, and Wren had to give way to making the Queen's House the central feature of the composition. By this time he must have become resigned to the thwarting of his ideals.

In the January issue of the "Review" are also several other features of great interest; these including, among current architecture, some excellent photographs of the new reredos in the Chapel of St. Michael and St. George in St. Paul's Cathedral, designed by Mr. Mervyn E. Macartney; some drawings by Mr. Robert Atkinson and etchings by Mr. Frank Brangwyn, A.R.A.; illustrated articles on the gardens of Loseley Place, the public buildings of the United States, the Robert Fulton Memorial, and the plan of Karlsruhe; while in the "Practical Exemplar" series are given some measured drawings of Nos. 5, and 58, Lincoln's Inn Fields—a building in the manner of, if not actually designed by, Inigo Jones.

NOTES FROM PARIS.

The accompanying illustrations of three examples of modern French work serve to show the general character of design and refined detail characteristic of the majority of the important new buildings in Paris. With regard to the caryatid balcony in the Boulevard Haussmann, by M. Goury, it may be pointed out that very few attempts of this nature are wholly successful, despite the fact that the Erechtheum furnishes such an excellent type. In the majority of instances the figure is not happily arranged, having the appearance, more often than not, of being crushed down by the superincumbent mass; while the change from the human body into the base is rarely managed successfully. In the Paris example illustrated on the preceding page, the architect has avoided both these defects and has produced a pair of figures exceedingly graceful in appearance, crowned by capitals rich in design. Note should be taken also of the ironwork to the balcony, which is typically French. The ironwork, too, is a prominent feature of the façade to the house in the Avenue du Bois de Boulogne illustrated on page 28, and in the detail of the main entrance to the Crédit Lyonnais in the Rue Quatre Septembre shown by the photograph below. In both cases the design exhibits much refinement, the Bois de Boulogne example being particularly delicate and light in effect. In the Crédit Lyonnais the lions' heads recall a favourite feature, here treated with good effect. All three buildings are carried out in the soft white stone used so extensively throughout Paris, a stone that lends itself admirably to carving, as the photographs very clearly show.

The 1911 bureau of the Société Centrale des Architectes is composed as follows: President, M. Bernier, Membre de l'Institut; resident vice-presidents, MM. Ch. Dupuy and L. Etienne; non-resident vice-president, M. A. Louvet (Versailles); principal secretary, M. Destors, joint-secretary, M. Ch. Wallon; editorial secretary, M. Frédéric Bertrand; architect, M. G. Olive; treasurer, M. George; "censeurs," MM. Daumet and Girault, Membres de l'Institut; and M. Roussi.

MM. Feine and Herscher, architects, have prepared a scheme for the construction of a gigantic open-air amphitheatre for the gardens situated between the Tuileries and the Carrousel. The amphitheatre will not be raised, but sunk. There are to be colossal excavations, and the displaced soil will form the basis of the upper promenade and gallery, which will be approached by means of grassy slopes. The construction will be of reinforced concrete, and there will be accommodation for about seven thousand spectators. The Government's interest in the project is inferred from the acquisition of the drawings exhibited by the authors at the last salon of the Société Nationale.

The syndicate of contractors for public works have just held their general meeting and banquet. At the banquet, M. Philippe Fougerolle, president of the syndicate, regretted the Government retrenchments on public works. He pointed out that whereas in 1802 the sum of ninety-eight millions of francs was allocated to public works, the budget of 1911 allowed only eighty-four millions. M. Charguérand, representing the Government, was present at the banquet, and replied that in two years Parliament had voted 300 millions of francs for various public works,

notably for the ports of Havre, Dunkerque, and Nantes, and for the improvement of the course of the Loire. He contended, moreover, that during the past four years the relations between the public departments and the contractors had been considerably ameliorated—as, for example, by the institution of an arbitration commission, and by the submission of great works to competition. The banquet was followed by the usual distribution of medals to workmen, etc.

The Société des Architectes Diplômés par le Gouvernement has elected for three years' service on its executive committee the following gentlemen: MM. Defrasse, Godefroy, Duquesne, Guilbert, Tzakiri, Lisch, Drouet, Longfils, Dupézar, Hannotin, and Gontier. M. Thoumy was re-elected general secretary, and the executive bureau for 1911 comprises the following: President, M. Defrasse; vice-presidents, MM. Monduit, Godefroy, and Mougenot.

The various juries of the "Three Arts" competitions, Ecole des Beaux-Arts, have concurred in the following awards for architecture: First class: Second medals to MM. Grappin (pupil of Bernier), Pillet (Defrasse), Madeline (Deglane), R. Leclerc (Laloux), Nagoroki (Marcel Lambert). Second class: Third medals to MM. de Perrot (Deglane), E. Reverdin (Pascal), Quillard (Lemareshquier), H. Lacoste (Deglane), G. Dumail (Bernier), Prieur (Hulot), and R. Marteau (André). There are also numerous commendations in the two classes. It will be remembered that an example of the work of Deglane, who, like Bernier, has in this list two medallists to his credit, was given in a recent issue of this journal.



DETAIL OF ENTRANCE TO CRÉDIT LYONNAIS, RUE QUATRE SEPTEMBRE, PARIS. V. LALOUX, ARCHITECT.

A STANDARD STRENGTH FOR
BRICKS.

By ALFRED B. SEARLE

The increased interest taken by engineers in building construction, and the familiarity with figures which is a characteristic of many of the promoters of concrete, constructional steel, and other materials, has rendered necessary the employment of some kind of standard specification for bricks.

At one time it was sufficient if a brick was accurate in size and shape, and was of reasonable hardness, so that the user might assume it to be durable, but with the increasing spread of the "scientific method" into almost every department of business life, there has arisen a demand for some more direct and tangible expression by means of which the value of bricks from different makers can be compared.

For many years past the two tests which have been regarded as sufficient are the "crushing test" and the "porosity test." The latter is simply a measure of the amount of water which can be absorbed by the brick, and is not so much a test of quality as a simple means of classifying bricks, the porous bricks generally, though by no means always, being rather weaker than those which are more vitrified, and, therefore, less porous. The reason that this test is not really valuable, except as a preliminary, is that some vitrification may have occurred which is sufficient to bind the particles of the brick into a strong mass, whilst yet permitting a considerable proportion of water to be absorbed. Firebricks made of very rounded sand-grains show this phenomenon in a remarkable manner. For most ordinary building bricks, however, the generally recognised standard of a maximum porosity of 12 per cent. is sufficiently reliable.

The crushing strength of bricks is a matter requiring far more attention, and even then it is in many ways unsatisfactory as a standard test. Great care must be exercised in bedding the bricks to be examined, as irregularities in the bedding and in the distribution of the pressure, no matter how slight these may be, cause serious errors in the results of the test.

What is true in testing is also true in actual use, for whilst the crushing test indicates the maximum resistance to crushing when the brick is under the very best conditions, it shows nothing which is at all comparable to the pressures to which the bricks will be subjected in ordinary use. Thus in testing the whole of a pressure is exerted in a vertical direction, but an irregularly bedded brick—and in use no brick is perfectly bedded—is subjected to twisting strains which are not present in the test, and which material, reduce its actual strength. The latter has become the more urgent because the Continental makers of sand-lime bricks have found it necessary, in their own interests, to insist upon a minimum resistance to crushing of 1,988 lbs. per sq. in. Further than this, the German Association of Brick Manufacturers has, as the result of the work of a special committee of investigation, arranged the following standards, which are to be the minimum for the bricks mentioned. As this Association is a very powerful one, the effect of this decision will be far reaching:—

Minimum Crushing Strength for Standard Bricks.

Blue bricks, clinkers,
and paving bricks 4,970lb. per sq. in.

First-class building bricks	2,130lb. per sq. in.
Second-class building bricks or "commons"	1,420 "

These requirements are somewhat severe, as the following figures from tests made some time ago by Professor Unwin, will show:

London stocks	1,380lb. per sq. in.
Leicester wire cut ...	3,870 "
Gault wire cut	2,250 "
Red rubbers	1,200 "
Staffordshire blue ...	12,500 "

Prof. Unwin's tests were all made on picked bricks, and represent a better brick than the average in the class named, and many other published tests show much lower figures.

At the same time, there can be no doubt that some limit below which bricks should not be sold without special attention being drawn to the fact, is desirable. The difficulty lies in deciding what shall be taken as the minimum.

It is, of course, obvious that some classification is necessary, as otherwise some bricks of good quality will be ruled out of the market. Thus rubber bricks, as a class, would invariably be too weak for any general scheme of standardisation to include them as "common building bricks." But leaving out certain bricks which may be regarded as "special," there are bricks which are considered to be quite "normal" by their makers which are so weak as to come far below the German standard noted above.

Partially vitrified bricks such as blue bricks and clinkers are, on the contrary, much stronger in this country than on the Continent, if the available published figures are representative, and the German minimum crushing strength for this class of brick is therefore much lower than is necessary for Great Britain.

If any such standard became generally recognised, hand-made bricks would have to be treated separately, as they are usually about two-thirds of the strength of machine made bricks from the same clay, and fired at the same temperature, though it is difficult to understand so great a difference in the resistance to crushing between bricks made by hand, and those machine pressed, except that the latter are denser.

A new test, which is the subject of much consideration at the present time, consists in endeavouring to break the material by bending it. This test is very difficult to carry out, as it requires relatively thin pieces to be cut from the bricks, and the jarring action of the chisel when cutting these pieces so affects the bricks as to render the figures obtained on bending very different from those which result from bending a piece of the same clay which has been made to the correct size of test piece and fired under almost identical conditions. Yet, to use such a test piece is to run risks in the way of identification which render the manufacture of special test pieces impracticable.

The testing of whole bricks by bending is frequently carried out on small portions of brick wall, but the results obtained are of little value so far as the bricks themselves are concerned, as the mortar is always far weaker than the bricks, and apparently trifling variations in the brick-laying have a noticeable effect on the result.

At present but few results have been obtained, and these are by no means representative inasmuch as some firms are using the term "bending test for a brick supported near its ends and loaded centrally until it breaks (a difficult piece of work

to perform with any degree of accuracy), whilst others modify the test in many ways.

If properly carried out, there are several advantages in such a bending test, as it conforms much more nearly to the conditions in actual use, but the small size of the brick, its awkward shape, and its excessive thickness, are all against the present terms in which the test is carried out. There is at present more likelihood of the results indicating the resistance of the brick to cutting than to bending, and the former information is of little value.

Though there is no immediate likelihood of a satisfactory standard for bricks being found, there is every reason why those interested should not be misled and accept an unreliable factor as the basis on which to erect a standard, for unless accurate results which truly indicate what is needed are obtained, much hardship will result.

THE BUILDING TRADE IN
SOUTH AFRICA.

(By Our Special Correspondent.)

The building trade of South Africa continues good. Prior to the consummation of the Act of Union the Transvaal Government had in project an extensive programme of public works, and new schools, universities, police offices and barracks, Government buildings of every description, in fact, have sprung up all over the Colony. Ending up its financial year, prior to the entry into union, with a substantial balance in hand, it was decided to devote something like a million pounds to the erection of administrative offices for the conducting of the Union and service and other affairs in Pretoria, which was selected as the administrative capital of United South Africa. This immense job, together with others ranging in value from £140,000 downwards, brings the total of building works being carried out at the moment to something between three and four millions sterling. In the Cape, Natal, and the Free State, the trade is in a much better position than it has been for the last six years.

During the war and immediately following the declaration of peace, building went on at a rate never before seen in South Africa, and our chief towns were practically rebuilt. The inevitable attack of indigestion followed, and since 1903 a starvation cure has been operating. Indeed, so pronounced has the process been that many old-established firms had to relinquish business and seek for other fields of labour. Johannesburg might be taken as a fair instance of the slump. In the boom times following the war the monthly return of plans passed by the Municipality usually amounted to a quarter of a million—in fact in one year (1905-6) over three million pounds in plans were passed. These figures dwindled down and down, until in one month last year the unprecedentedly low figure of £16,000 was reached. This was zero. With the result of the Convention and the Act of Union came prosperity and belief in South Africa's future, and to-day we are in a nice steady prosperous flow of business. The above tale applies equally to all centres.

The Royal Visit.

The Duke of Connaught, who came out to open the first Parliament of United South Africa, is having a busy time. Ceremonies of all kinds have been left for His

Royal Highness to perform, and his tour through the country has been in every respect an arduous one. He has laid the foundation stones of the Union Buildings. These, each of four tons, cut from dark-blue Pretoria granite, are respectively inscribed in English and in Dutch. The ceremony, which was brilliant and impressive, passed off most successfully. (A description of the buildings appears in another part of the present issue.)

On November 29th His Royal Highness will lay the foundation stone of the new Town Hall, Johannesburg, a contract which will run into about £300,000. Extensive preparations have also been made for the Duke's visit to the Golden City, and a long programme of events commences with this ceremony.

Labour Troubles.

In the Transvaal there operates an Act of Parliament known as the Industrial Disputes Prevention Act, which was applied to the Building Trades in the early part of the year. The Act provides that before a strike or lock-out can take place, the cause of the trouble must first be submitted for investigation before a Court of Arbitration consisting of representatives from the employers and workmen, with an umpire appointed with the consent of both parties, or, if they fail to agree, by the Government. One court has already sat to decide on an application made by Pretoria bricklayers for an increase of wages from 2s. 6d. per hour to 2s. 9d. The decision in this instance has not been made known. Johannesburg operative masons are demanding an increase in wages from 2s. 6d. per hour to 3s., with a reduction in hours from 48 to 44 per week. The bricklayers in the Golden City are asking a rise in wages from 2s. 6d. per hour to 2s. 9d., while a similar demand comes from Krugersdorp bricklayers, who, however, hold their claim in abeyance until the settlement of the others. The prosperity in the building trade is the cause of the demands, and meanwhile the Transvaal Building Trade Employers' Federation is having a busy time. In a future letter I will refer further to this matter.

The message sent to the South African Federation by Mr. Smethurst, President of the British Federation, through Mr. Jas. T. Brown, General Secretary here, has created a most favourable impression, and South African builders are in hopes that they may receive a visit from a member of the home body. He is sure of a very hearty welcome.

FAILURES IN THE BUILDING TRADE.

The table of statistics compiled by "Kemp's Mercantile Gazette" shows that the total number of official failures in the United Kingdom last year was 9,054—the lowest number recorded for the last twenty-three years. In the building and timber trades the total number of failures was 961, as compared with 964 in 1909, 1,197 in 1908, 1,216 in 1907, and 1,202 in 1906.

"Certainly, with such returns before us, it is impossible to deny that there has been a general increase in the prosperity of the country, although there are probably some trades that have not shared in this all-round improvement. We find, indeed, decreases in failure everywhere, and the figures are quite encouraging.

"Except the building trades, which are always affected by financial views as to land and taxation, every kind of business appears—at least upon these official

figures—to have done much better during last year. These statistics, of course, are mainly affected by the state of our home trade, which may often be depressed, although our foreign trade is prosperous. It is, however, well to note that when there is less enterprise or speculation, which always come out in good times, there must necessarily be fewer failures. From this, it follows that a reduction in the way of insolvency may sometimes be caused by a cutting down of the credit that used formerly to be given, or by the adoption of more cautious methods of trading, with a tendency to do as much business as possible on a cash basis. In booming times, risks are run by traders and tradesmen which would not be considered in periods of sickness and depression. We can only deal with the figures of official failures as they are; and, taken alone, we must beware of drawing any conclusions that a wider and more complete view of the trading during last year might not completely warrant. Still, with the reduction of unemployment, and in other ways, there has probably been more spending power amongst most classes than was the case in 1908 or 1909, with the result of a decline in the general insolvency."

RECOVERING CEMENT FROM "EMPTY" CEMENT SACKS.

An interesting investigation has recently been conducted by a construction company of Boston, Mass., relative to the economy of treating empty cement sacks to recover cement adhering to them before bundling for return shipment. Instructions were sent to a number of jobs to have the man who was bundling the bags stretch each one over two sticks, mouth down, and then beat well. The cement was collected in a box. A careful account was kept of the number of bags shaken, the amount of cement saved, and the amount of the man's wages. Strength tests were made on the recovered cement, as it was probable that dirt or other foreign substances might be mixed with same. The total number of bags reported was 7,598; the amount of cement saved 4,130 pounds. The cost of shaking, bundling and tagging the above bags was 22.44 dollars, or about one-third more than the average cost of bundling and tagging without shaking. Hence the net cost of the cement saved was 7.48 dollars.

Comparative tests were made of the tensile strength of the shakings and of fresh cement from the same lots. An average of these tests showed a loss of 59 per cent. in strength after a 24-hour set, but a loss of only 35½ per cent. after a 7-day set. On the basis of this last figure, the 4,130 pounds of shaken cement is equivalent to 2,664 pounds of fresh cement. At 380 pounds to the barrel, there was an equivalent of seven barrels of fresh cement recovered. The average price paid for cement on these jobs was 1.41 dollars, so the value of the recovered cement was 9.87 dollars.

There is a further consideration, however, and that is the saving in freight on the cement shaken from the bags. The average freight paid for returning the bags from these jobs was 24 cents per hundred pounds, which would amount to 10.91 dollars on 4,130 pounds.

The total amount saved is consequently 20.78 dollars, which was accomplished with an extra expenditure of 7.48 dollars, the net saving being 13.30 dollars, or 17½ cents per 100 bags.

RUISLIP MANOR ESTATE COMPETITION.

Last week we announced the results of the competition for the laying out of Ruislip Manor Estate. Below are given summaries of the reports accompanying respectively the first premiated design by Messrs. A. and J. Soutar, of 37, Westover Road, Wandsworth, S.W., and the second premiated design, by Mr. George Hornblower, F.R.I.B.A., 2, Devonshire Terrace, Portland Place, W.

Precis of Messrs. Soutar's Report.

The principal considerations which have influenced the general arrangements of roads are as follows:—1. Convenience of access to all parts of the estate, together with ample provision for through traffic from all directions. 2. Economy in road making, both in regard to the widths of roads, and the careful consideration of the contours. 3. The planning of as many roads as possible running north and south so as to secure an ideal orientation for the majority of the houses. 4. A laying out has been adopted which, while affording ample opportunity for architectural treatment and interesting effects, would still be sufficiently "commercial" to secure financial success for the whole.

The scheme submitted could not be carried out in all its details under the existing by-laws of the Local Urban District Councils, but under the Town Planning Act application has been made by the local authorities for powers to modify these by-laws, and also to obtain means of access to the estates over adjoining land. The positions of these access roads were indicated in the conditions of competition, and have to a certain extent influenced the scheme of development.

With regard to the character of the roads generally, the probable traffic requirements have been taken into consideration; and where wide roads have not been considered necessary the distance between the frontage lines has not been reduced; the substitution of additional front garden in exchange for a needless expanse of macadam has now been made possible by the Town Planning Act; the consequent economy in road making and the corresponding reduction in rent being an added inducement to those about to build. Tram routes are suggested connecting up the various railway stations, shopping centres, etc. The geographical situation of the copse-wood area would suggest its being the most suitable in every respect for the larger class of house, and this point has been kept in view in distributing the types.

Plots Nos. 2 and 3, being for all practical purposes one area, have been considered the best site for the majority of the medium-sized houses (i.e., houses from £30 to £60). It is assumed that a large proportion of this type will be required.

The southern area, which is adjacent to the G.C. and G.W. Railway, would be the most convenient for the houses under £30 rental; the level nature of the ground being a consideration in the cost of erecting small cottages, while the proximity to the above-mentioned railway would make it a convenient situation for workshops, coal-yards, depots, and small industrial sites.

The rental value of houses on this area approximates the maximum in the more northerly and central portions of the areas and the minimum in plots adjoining boundaries. It is not suggested that

this proposed classification be rigidly adhered to, but it forms a general principle.

The indiscriminate intermixing of large and small houses is not recommended, but a judicious proportion of medium-size houses may be distributed among the larger ones without depreciating the value of the latter.

As a basis of calculation the following numbers of houses to the acre have been assumed :

Area No. 1	average 3 houses per acre (gross)
" No. 2	" 4½ " " "
" No. 3	" 8 " " "
" No. 4	" 10 " " "

Area No. 1, The Copse Wood.

The natural formation of this part of the estate has suggested the laying out indicated. The two wooded hills are a valuable feature in the landscape from the surrounding country, and an effort has been made to preserve this feature by leaving belts of copse on the slopes and crests of the two hills. These would form excellent natural parks, while enhancing the amenities of the estate.

The majority of the houses would be placed on the most level ground, while on the western slopes the larger houses might be situated nestling amongst the trees, which as far as possible should be preserved even on the building plots. The building plots on the slopes are kept single width, with all houses looking downhill; this has been done to secure economy in drainage as well as good aspect.

The central avenue is shown to have a 50ft. wide grass strip running up the centre, with a roadway 30ft. wide on either side. At either end of this avenue, and at a point where the ground is well raised above the centre, might be placed two churches. The one to the south would have a background of trees, and would form a picturesque and architectural terminal to the avenue.

A few large houses might be placed along the eastern boundary adjoining the golf course, which would form an open space as an amenity thereto.

Owing to the proximity of Northwood, it is not considered necessary that provision should be made for shops on this area.

A central situation on the bank of the reservoir has been devoted to the purposes of aquatic sports. This plot could be laid out as a pleasure resort, with a café, ornamental gardens, etc.

Area No. 2, The Park Wood, and No. 3, South of Park Wood and North of District Railway.

For the purposes of this description, Area No. 3 has been considered in conjunction with No. 2, of which it forms a part. The northern portion of this area is of a very hilly nature, and it has again been thought advisable to preserve the landscape as far as possible. The preservation of a portion of the copse would shelter the estate from the north, and afford an eminently suitable situation for a small cottage hospital or sanatorium.

A suggested architectural treatment is shown on plan for a collecting centre for all the main roads leading into the road connecting this area with Northwood and the copse-wood area. A site for a church and two sites for public buildings have been indicated in the above place.

A wide road leading from the centre of the "Place" at the apex gives a direct communication to the centre of the estate, continuing under the district railway by

the line of the existing bridge. Two other main roads lead out of this "Place," forming a triangle; the one to the west has its axis central with the tower of St. Martin's Church in Ruislip Village, while the other leads in the direction of Eastcote. A large recreation ground is suggested in the centre of this area, where the ground is level and suitable for games. Through the centre of this park would flow the river Pinn, which it is proposed to direct into a straight channel. By means of a large pool at the point where the Pinn enters the recreation ground, it would be collected and directed into a broad pond, narrowing at each cross road for economy in bridging. This divides the main recreation ground into four, each portion being large enough for cricket or football; these it is proposed should be used alternately, while the others are recovering from the effects of wear. The central position of these playing fields would be advantageous to the whole estate while absorbing the river Pinn, which is too shallow to culvert, and which, if treated as shown, would have an effective appearance, while it would retain its function of collecting surface and spring water.

At the intersection of the central avenue with the road between Ruislip and Eastcote a shopping centre is suggested. Further accommodation is provided on the existing road in Ruislip village.

A convenient situation for a garage could be obtained adjacent to the latter.

A site for baths and laundry is indicated adjacent to the river Pinn.

In addition to the existing school, further accommodation is provided. In this connection the existing accommodation in Ruislip, Eastcote, and Northwood has been taken into consideration.

Two sites have been reserved on the crest of Windmill Hill, which could be utilised for public buildings, such as fire station, public library, etc.

A wide belt of open space has been preserved on either side of the Metropolitan and District Railway, on which it is proposed houses should front. This would convey a pleasing impression of the estate from the railway, besides removing the houses to a reasonable distance therefrom.

Area No. 4, South of Railway.

Owing to the comparatively level nature of this area, and the fact that it has been chosen as the most suitable for the smallest class of property, a simple rectangular development has been adopted.

South of the bridge, the Central Avenue has been divided into two branches, each 40ft. wide, separated by a wide stretch of grass surrounded by trees, thereby providing the lower portion of the estate with ample recreation grounds easily accessible from any portion thereof.

Towards the centre of its length, this open space has been increased in width by the addition of two rectangular plots laid out as pleasure grounds, with bandstand and public shelter. The better class houses in this portion would be placed facing this open space, and the size of the houses would, generally speaking, decrease as they neared the boundaries.

To ensure direct access to the railway station at Northholt, all roads converge towards a collecting centre at the point where the river Yeading crosses the estate; and a main avenue, 60ft. wide, leads from this centre direct to Northholt Station. A shopping centre could be

provided at this point, near the railway station.

On the west side of the main road it would be possible to secure siding accommodation from the G.C. and G.W. Jt. Ry. which would greatly facilitate the delivery of coal, building materials, etc., on the estate.

The centre portion of the open space has been chosen as the most suitable for the schools, being practically equidistant from quarters. The school would be one storey high and the benefit to the health of the pupils by the free access of light and air to all parts of the buildings and playgrounds would amply justify the selection of this site for the purpose.

Convenient sites are provided for two churches.

In addition to the large open space aforementioned, a large number of smaller recreation grounds would be provided, so that all houses would have the benefit of a pleasant view.

The numbers of houses of varying rentals have been suggested as follows:—

Houses not exceeding £30 rental	3,556
" " " £60 "	3,541
" " " £100 "	524
" exceeding £100 "	21

Total number of houses 7,642

The following statistics may prove of interest as showing the large portion of land devoted to recreation:—

	Acres.
Area devoted to Building Plots	837
" " " Open Spaces	255
" " " Roads	184
Total Area about	1276

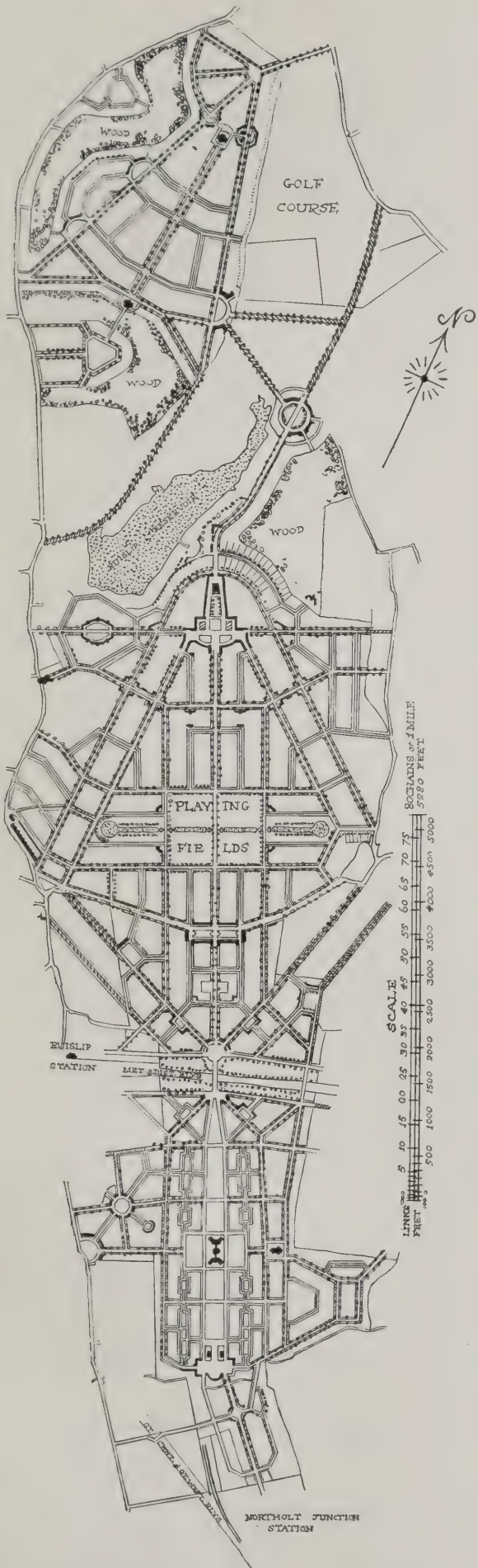
Precis of Mr. Hornblower's Report.

Open spaces are provided for both use and effect, whilst large playing fields suitable for cricket, football, etc., are in approximate proximity to the smaller houses, and open playgrounds where children will be within view of the houses. Adequate grounds are shown for croquet, tennis, bowls, etc., adjoining the sites for large houses.

It is felt that the retention of large unpolluted areas of woodland is undesirable, and likely to be a nuisance at holiday times. The alternative was consequently adopted of devoting the woodland areas to larger houses on larger plots, where the bulk of trees might be saved to preserve the character. Where land can be had on terms so favourable, plots 150 feet in depth can be afforded even to smaller houses, and none are shown less in depth. Comparatively little planting would be necessary along the roads; large parts of the site have well-grown timber which would be preserved.

Part of the Copse Wood area, owing to the small stream which traverses it and becomes swollen in winter, is unfit to build upon. A small park or ornamental garden is provided here. Considerable areas on either side of the river Pinn, and also on either side of the smaller stream near Northolt junction are liable to be flooded. These areas, with other land adjoining, are set apart as open spaces. The river Pinn is a considerable stream with the banks in parts prettily wooded, and would form an attractive feature in the park where, by an enlargement a lake could be formed as suggested.

The character of the higher ground, owing to undulations and beautiful timbering, should render it very attractive to people of means, and a strong effort



should be made to keep the building plots large. Obviously more plots than shown could be arranged without altering the scheme.

The factories and workshops are placed at the lower end of the site. The design of such buildings is being more and more studied and it is felt they need not be in-artistic. Instances could readily be cited of old as well as new which are suitable additions to the appearance of a town. Generally, however, they would especially need to be controlled as to design and treatment.

Economy in road formation has been a prominent consideration, as the following table shows.

	acres
Area devoted to building plots ...	994
„ Open spaces ...	*137
„ Roads ...	145
About total area	1276

*Already explained in regard to open spaces; large plots are allotted to superior houses where trees occur.

The roads are planned as far as possible to run North and South; the departure where a diagonal treatment gives direct access to Ruislip making the laying out interesting as well as useful. Convenience of access to all parts of the estate has been well considered, and as a means of transit electric tramways are suggested along the main roads.

The sites for places of worship are provided where due quiet should be secured. Shopping and business centres are arranged in central positions, including a desirable one for the Copse Wood area. Motor garages are needed in three or four places and suitable positions are indicated. Sites for public buildings, clubs, etc., are shown for convenience of access near the main avenue, and suggested tramways, and the positions for schools have been carefully considered.

Though it is possible to develop the estate without having recourse to a scheme under the Housing and Town Planning Act, a scheme under the Act is recommended.

Mr. W. Thompson, managing director of Ruislip Manor, writes to the "Times" to correct a misapprehension contained in a letter sent to that journal by Messrs. Reynolds and Bacon, who assumed that the winning design gives an average of nearly nine houses to an acre, instead of an average of six houses to an acre, as prescribed in the conditions. Mr. Thompson states that the assessors, Sir Aston Webb and Mr. Raymond Unwin, have strictly followed these conditions. The area planned by the authors of the winning design is 1,275 acres for 7,642 houses, or an average of six to the acre. The mistake is due, Mr. Thompson points out, to (1) the assumption that only two-thirds of the estate have been planned by the winning architects, whereas as a fact the whole estate has been included in the plan, and (2) that an average for the estate has been confused with a maximum for a specified area, which will, of course, only be settled under the general provisions of the town plan.

OBITUARY.

Sir John Aird.

Sir John Aird, who, having been for some time in failing health, died on January 6th at his residence, Wilton Park, Beaconsfield, Bucks, was born in London on December 3rd, 1833, and at an early age entered his father's business,

and was still in his teens when he was entrusted with a large amount of important work in connection with the great exhibition of 1851. Afterwards he was associated with the construction of many large contracts at home and abroad, such as gasworks, waterworks, railways, and docks. Among his most famous undertakings were the Assuan Dam on the Nile (1898-1902), and the Esneh barrage (1906-1909). He was M.P. for Paddington from 1887 to 1905, and was created a baronet in 1901; the successor to the title being his elder son John, who was born in 1861. The late Sir John was an ardent collector of pictures.

Mr. Thomas Cox.

The death is announced of Mr. Thomas Cox, head of the firm of brick and tile manufacturers, Messrs. Cox, Sons and Co., of Highbridge, Somerset. Mr. Cox was 83 years old.

At the last meeting of the Royal Institute of British Architects the decease was announced of the following members: F. W. Peel (Fellow); C. A. Callow (Associate); and F. W. Roper (Associate).

COMPETITIONS.

Proposed New University College for Southampton.

A proposal is on foot for the erection of a University College at Southampton for 400 students; the first section of the building being estimated to cost £20,000. Representations have been made to the R.I.B.A. with regard to the conduct of a competition for the design, and the appointment of an assessor. As a result, it is understood that Mr. Henry T. Hare, F.R.I.B.A., will be appointed as assessor. Formal announcements of the competition will be made later.

Church, West Llandudno.

The awards in this competition, in which Mr. W. D. Caröe was assessor, are announced as follows: 1, Mr. R. T. Beckett, Chester; 2 (£10), Mr. North, Llanfairfechan.

Manchester Library and Art Gallery.

A correspondent of the "Manchester Guardian," who describes himself as "a member of one of the oldest firms of Manchester architects, who have paid rates to the city for fifty years," writes protesting against the action of the Infirmary Site Special Committee in proposing to hold an open competition for the new library and art gallery, and claims that the competition should be confined to local architects. We are glad to note, however, that the "Manchester Guardian" does not agree with this view of the matter, our contemporary expressing the wiser opinion that an open competition is the fairest and most hopeful way of getting the best design.

International Telegraph Monument at Berne.

The following letter has been received by the secretary of the Royal Institute of British Architects from the General Post Office:—

"I am directed by the Postmaster General to inform you that no suitable design having been submitted in connection with the recent competition for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union, it has been decided to hold a further competition for which de-

signs must be sent to Berne by the 15th of August next. I am to enclose three copies of the programme for your information. From the report upon the recent competition made by the International Jury, who considered the designs, it appears that out of the 92 designs submitted, no fewer than 70 were either clearly inadequate or had no relevance to the idea which they were intended to represent. The Jury wish to emphasise the importance of fully realising the idea which the monument is to commemorate, and of submitting only such designs as could be carried out under the conditions set forth in the programme, and it is considered desirable that the attention of intending competitors should be specially called to these requirements."

The successful competitor will be entrusted with the execution of the monument, at a cost not exceeding 170,000f., all fees and charges included, with the exception of carriage expenses, Customs duties, and the cost of the foundation up to the ground level, which will be borne by the Swiss Federal Council. The jury will have at their disposal the sum of 20,000f. as premiums. Models must be deposited at the Federal Palace, Berne, before August 15th, 1911. British artists can obtain copies of the programme on application to the Secretary to the General Post Office, London, E.C. The British representative on the international jury is Sir George Frampton, 90, Carlton Hill, St. John's Wood, N.W.

Deplford Central Library.

Architects practising in the City of County of London are invited to send their names to Mr. Vivian Orchard, Town Clerk, Town Hall, New Cross, S.E., not later than 9 a.m. on January 18, stating particulars of any similar buildings that have been erected under their supervision. Twelve architects will then be asked to submit designs, and premiums of £50, £30, and £20 will be offered. The first premium, however, would merge.

RECENT ENGLISH DOMESTIC ARCHITECTURE.

The annual issue of the "Architectural Review" for 1910 devoted to recent examples of English domestic architecture furnishes a wealth of illustrations of great interest; ranging from houses of quite modest pretensions to large mansions in town and country. The illustrations are all from specially taken photographs, accompanied by plans and descriptive particulars, and are thoroughly representative of the best work which is being done in this country at the present time. The work of such well-known architects as Mr. Lutyens, Mr. Lorimer, Mr. E. Guy Dawber, Mr. Ernest Newton, and Mr. Walter Cave is included, and in addition are given many examples by lesser known architects, and architects who do not figure prominently in professional circles, though producing excellent work in a quiet way. The volume is issued at 5s. nett., and is excellently produced. As an example of the type of illustration contained in it, we give on the opposite page a detail of the main entrance to a house at Hampstead which has recently been completed from the design of Messrs. Ashley and Winton Newman, of Gray's Inn. This house offers many features of interest, not the least being the treatment of the brickwork, which is full of vitality, as, too, the leadwork on the building.



In this house the architects have displayed much ingenuity in the treatment of the brickwork. The above illustration is taken from "Recent English Domestic Architecture," some particulars of which are given on the opposite page.

MAIN ENTRANCE AND LEAD-COVERED ORIEL, "EAST WEALD," BISHOP'S AVENUE, HAMPSTEAD, LONDON.
J. H. V. ASHLEY AND WINTON NEWMAN, ARCHITECTS.

INIGO JONES AND HIS SUCCESSORS.

BY J. ALFRED GOTCH, F.S.A., F.R.I.B.A.

In the seventh of his series of lectures on "English Vernacular Domestic Work," delivered at University College, London, Mr. J. Alfred Gotch shows how, with the advent of Inigo Jones, there came a final severance from the spirit and the methods of mediævalism, and the beginning of the modern era.

ALL through the mediæval period, architectural design seems to have been impersonal, the result of a number of men working together, each concerned with the portion affecting his particular trade. It is probably true that some one individual controlled the general scheme, and gave an oversight to the work of the others; but not in such a sense as to have been entitled to be called "the architect" as we understand the term. To us the architect is the person who not only provides the plan, not only puts into practicable form the ideas of the employer, but also designs most of the details. He not only informs the various artificers that particular work is required in particular places, but he also provides them with drawings showing what the work is to be and how it is to be fashioned. His influence to-day is much wider and much more intimate than it was in the Middle Ages—the ages which produced our cathedrals, our ancient churches, castles, and manor-houses.

Modernity of the Term "Architect."

The term "architect" appears very seldom either in literature or in documents previous to the seventeenth century. Shakespeare uses the word only once; and in contracts of Elizabeth's time it occurs seldom, if at all, although the documents refer to the provision of design as well as workmanship. The word appears now and then in the numerous books published for the guidance of designers in building matters in the reigns of Elizabeth and James; but the appeals which these books made on their title-pages and in their pre-faces to those for whom they were written were addressed primarily to artificers, and only incidentally to architects, who seem to have been included in order to catch a possible purchaser. The reason is obvious: there were hardly any people who called themselves architects. The publication of these books is itself a sign of the change which was coming over the methods of design. Hitherto design had been a matter of tradition, preserved by guilds, handed down from father to son, or from master to man. The horizon of a mediæval workman was limited; he neither knew nor cared much for what was being done in distant lands. His style was influenced by local considerations; and although he conformed to the general changes which affected the whole of Gothic architecture, there was usually a local flavour about his work. The difference in character between the work in Norfolk, Northamptonshire, and Somerset is obvious at first sight, but a closer scrutiny will often reveal local variations in those districts themselves.

Early Books on Architecture.

Why were these books published, and what kind of architectural style did they illustrate? Did they bring before the eye of the designer masterpieces of Gothic architecture, or details of Gothic work? Not at all; no book illustrating Gothic architecture was ever published till the end of the eighteenth century. There was, in truth, no need for such a book. The mediæval workmen had their own tradi-

tional knowledge, and it concerned them not at all to learn how the workmen in Germany, or Southern France, or Spain, differed in their ways from themselves. They gave no thought to such matters, nor did they think of themselves as being concerned with architecture. They merely built, in the manner of their fathers.

The Italian Manner Introduced.

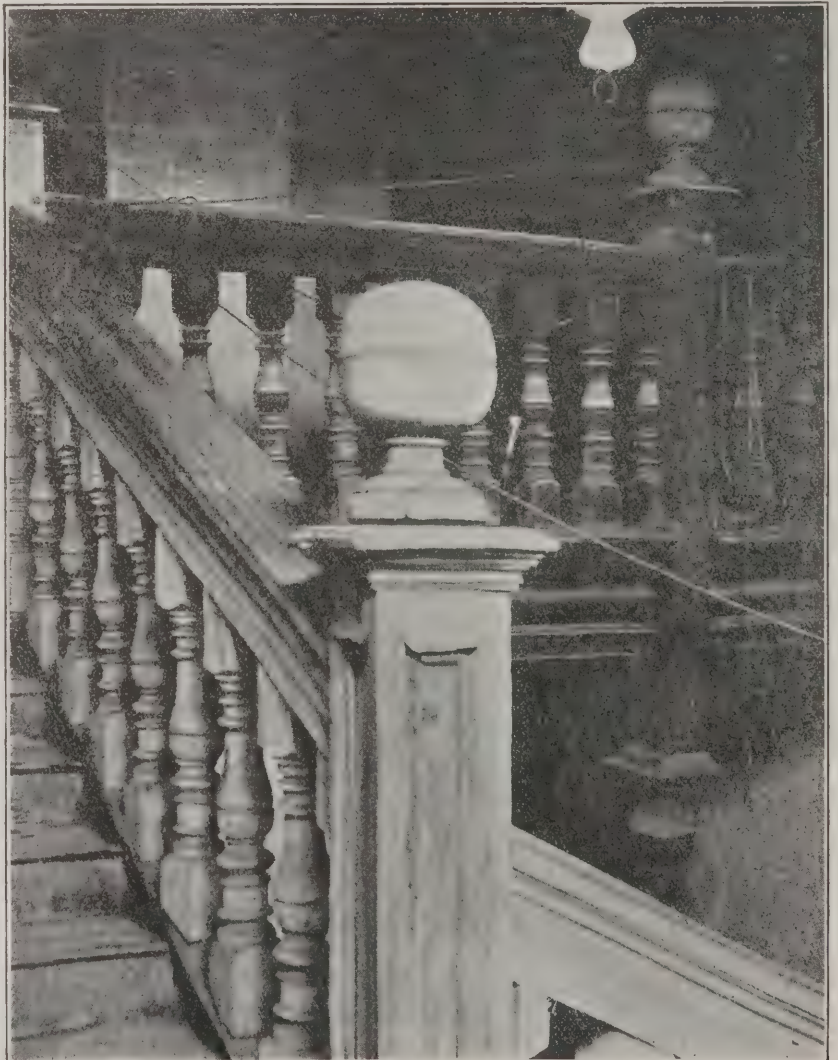
But although the successors of the mediæval craftsmen in the mid-sixteenth century shared their predecessors' apathy in respect of what was being done abroad, it was otherwise with those for whom they worked—the great men who were building fine houses all over the land. To these had come new ideas in relation to their buildings. They had heard of the splendid work that had for years been executed in Italy. Some of them had seen it; monarchs and wealthy nobles had even brought foreign craftsmen over to exercise their skill in the northern parts of Europe. The Italian manner was a novelty in this land of Gothic traditions. But the new fashion caught

on. Employers demanded the novel detail in their houses; but the foreign artists were not numerous, and so the English workmen had to supply the best imitation they could contrive on a scanty training. Here came the opportunity for the book-makers. They showed the way in which Italian buildings were designed; they illustrated the "Orders" which gave these buildings their distinctive character; they showed how Classic detail might be applied or perverted to meet the exigencies of buildings which had a Gothic parentage. The books, therefore, were published in order to help designers who aimed at working in the new Classic style.

The effect, of course, was to foster that style at the expense of the native Gothic. It is true that books were not widely distributed: there was not in those days the rapid dissemination of ideas that there is in our own. But if anyone wanted a book about building, he could only find such as dealt with Classic architecture. Thus it came about that in the course of half a century people of culture regarded all Gothic buildings—even the noblest—as barbarous, and not worthy of the name of architecture. The "Gothic Order," as it was called, was merely "a fantastic and licentious manner of building."

Architects Study the "New Style."

It was only a small proportion of the actual workmen who were able to study books; the rest picked up the new



STAIRCASE, CHELVEY COURT, SOMERSET.

manner from such foreigners as they met, from work which they saw as they moved about, and occasionally, perhaps, from oral description. Some worked all their lives on the old lines. One result of the difficulty of imbuing the workmen with the requisite knowledge was that some of the men whose duty it was to overlook buildings—the surveyors—made a point of studying the new style either through books or by foreign travel. They rendered themselves familiar with Classic detail, and were thus enabled to give the desired character to the detail of the buildings under their charge. They gradually became more and more responsible for design in the various branches of the building trades, and thus grew to be architects as well as surveyors. The inevitable tendency was for architectural design to become more personal, and for its results to become less like a spontaneous growth of the land.

English and Foreign Books on Architecture.

The number of architectural books published was not in reality very great; they were mostly of foreign production, and probably few copies found their way into England. The earliest were printed in Italy during the closing years of the fifteenth century. By the middle of the sixteenth century there were perhaps half a score in existence, some in Italian, some in French. These were obviously of no use to unlettered workmen, but they were appreciated by men of learning, and were studied by some of the surveyors of the time. By the end of the century, one or two Englishmen had produced treatises on architecture, but their direct effect on English design can hardly be traced. It is, indeed, unwise to look to any of the books of the time for direct and immediate influence; their effect seems to have been gradual. As may be supposed, it would be the illustrations which would have the greatest weight, for they would be intelligible to men unacquainted with the language of the text. The more important treatises confined themselves largely to drawings of the Orders, but a few smaller books, published by Germans and Dutch, gave many illustrations of particular features, such as doorways, windows, and so forth, and these appear to have appealed more powerfully to English workmen, and to have influenced in some degree the appearance which they imparted to their details.

De l'Orme and Du Cerceau.

In another and a different direction some of the French books would seem to have had an interesting effect. Philibert de l'Orme and Androult du Cerceau had published remarkably fine illustrations of the more important buildings recently erected in France. It is certain that John Thorpe, who was the most accomplished and ingenious of the English surveyors of the time, had studied Du Cerceau's books, and it is quite conceivable that, fired by such an example, he may himself have contemplated a similar production for England, and that to this idea is owing the very interesting collection of drawings now preserved at the Soane Museum.

But although we may perhaps see in the books of the sixteenth century the genesis of our own English architectural publications, their immediate interest lies in the fact that whatever was published about the beginning of the seventeenth century dealt with Classic architecture, and that anyone who sought in books for information about building found nothing about

the old Gothic detail, but only instructions how to design in the Classic styles.

Ancient Traditions and New Desires.

There were, therefore, two forces at work—ancient traditions on the one hand, new books and new desires on the other. The leader of the army was Inigo Jones, who had travelled in Italy for the express purpose of studying its architecture. He seems to have thought that if the new style was worth imitating, it was worth doing well; or rather, perhaps, we ought to say that he acquired new ideas upon the subject of architectural design, and, having saturated himself with the Classic spirit, devoted himself entirely to that style. He certainly was not a mere imitator. He was sufficiently touched with the ancient fire to make all his work highly original. It was consistent in



DOORWAY, CHENEY COURT.

treatment, and he eschewed all distinctly Gothic forms.

It was not so with the many obscure designers who had not had his opportunities. They were all more or less subject to the prevailing fashion, but their work shows a considerable admixture of the old-fashioned detail. In some remote places, indeed, and in buildings of no great importance, the style that had established itself at the beginning of the seventeenth century lingered on until the end. [Examples were shown from a farmhouse at Brockhall, 1677; Stapleford, Leicestershire, 1633; Chelvey Court, Somerset; Cheney Court; Cold Ashton, Wetherby; Houghton Conquest, about 1620; and Burford, after 1634.]

Inigo Jones and Italy.

What is interesting with regard to the work of Inigo Jones is that he went to Italy on two occasions—once at the end of the fifteenth century, when he was about twenty-five years old, and again in 1613, when he was forty. In the meantime he had been largely employed in designing the setting and scenery of the masques in which the Court of James delighted, an occupation which no doubt gave him

facility in designing in the round. During his second visit, which lasted some eighteen months, he studied the buildings of Italy with much care, and there is a volume of Palladio in the library of Worcester College, Oxford, which is full of his notes written on the margins.

He returned to England in 1615, fully equipped for architectural design, and almost at once obtained employment in high quarters. His most notable work was a vast new palace for the king at Whitehall, of which only a very small and subsidiary portion was actually built, namely, the banqueting hall. His designs for the palace are of great interest, but it would take us too far out of our course to study them at all closely. What is important to bear in mind now is that the Banqueting Hall, which is the most strictly Classic building prior to Wren's work, fifty years later, was built in 1622, some fifteen or twenty years earlier than the work shown on the screen as above-mentioned, which all bore traces of the disappearing style.

Authorship of Early Work.

It is very difficult to assign work with certainty to the masters of three centuries ago, and much of that attributed to Jones cannot be substantiated; but among the houses with which he is plausibly credited are Raynham Park in Norfolk, and Coleshill in Berkshire, of which plans and elevations were shown and described; as were also views from Kirby (1638-40); Reindeer Inn, Banbury; Harringworth House; Wilton House; the Queen's House Greenwich (1635); a house in Salisbury close, which is in a fine manner, and was the forerunner of many similar houses; and the garden front at Brympton, which is attributed to Inigo Jones.

John Webb, Jones's son-in-law and pupil, did much charming work, in which there was a considerable play of fancy, and a piquant handling of Classic detail.

Sir Christopher Wren.

The lecturer then gave a brief summary of the career and character of Wren, whose first architectural work was the Sheldonian Theatre at Oxford (1664-8), which is of ugly shape and crude in detail. In 1665 Wren went to France to study architecture, sketched most industriously, and brought back "almost all France on paper." He was not much concerned with domestic architecture, except in the form of palaces; but one of the small houses attributed to him is at Chichester. Other examples attributable to Wren that were thrown on the screen were The Deanery, Wells; Brewer's Hall, 1673; Hampton Court, etc. For comparison with Wren's work, some contemporary examples from France were shown.

In conclusion, the lecturer said that the magnificence of Elizabeth's days was tinged with homeliness; the magnificence of Queen Anne's time was much more haughty and exclusive. Later, considerable sacrifices of comfort were made for the sake of display.

Liverpool Custom House.

The Liverpool has decided not to accede to the request of the Liverpool Chamber of Commerce for the erection of a more centrally situated and conveniently appointed Custom House near to the offices of the Mersey Docks Board. This decision was made known at a meeting of the Chamber of Commerce held last week, when the greatest disappointment was expressed.

NEWS ITEMS.

Lectures on Cement Manufacture, etc.

On the invitation of Professor Hopkinson, of the Engineering Department of the University of Cambridge, Mr. A. C. Davis, of the Saxon Portland Cement Co., Ltd., is lecturing on the manufacture, testing, and uses of cement, and on theoretical and practical concrete engineering.

* * *

Proposed Reconstruction of Chester Infirmary.

A proposal is under consideration to reconstruct Chester Infirmary as a memorial of King Edward VII., and an anonymous donor has offered to contribute £1,000 provided that the work is commenced at once. It is estimated that the scheme will cost from £15,000 to £25,000.

* * *

New Schools at Blyth.

New elementary schools in Morpeth Road, Blyth, have been erected from designs by Mr. Hal Wright, F.R.I.B.A., of the firm of Messrs. Armstrong and Wright, architects, of Newcastle-on-Tyne. Accommodation is provided for 750 scholars (500 mixed, and 250 infants) in separate blocks. The general contractors were Messrs. J. and W. Simpson, of Blyth.

* * *

Reinforced Concrete Sleepers.

About a quarter of a mile of the London and North-Western Railway Company's "up" line immediately north of Pinner Station has been laid with sleepers formed of reinforced concrete. These sleepers are placed somewhat closer together than those made of timber, and, except where the chairs are placed, are of smaller section. It is understood that if the experiment shows satisfactory results, the use of reinforced concrete for the purpose will be extended.

* * *

The Wolfe Statue.

The bronze statue of Wolfe which has been erected in the market-place of his native village of Westerham, Kent, was unveiled by Field-Marshal Lord Roberts last week. The statue, erected by public subscriptions collected by the Wolfe Memorial Committee, is the work of Mr. F. Derwent Wood, A.R.A. Wolfe is represented as he appeared, with his sword uplifted, and in the act of moving forward, just before he received the bullet from which he died in the moment of victory on the Heights of Abraham. The figure, which is nearly 8ft. high, rests on a block of Portland stone.

* * *

Birmingham Town Planning Scheme.

At a Local Government Board inquiry held in Birmingham last week, the City Council applied for authority to proceed with a town-planning scheme. The area included in the scheme is of 2,320 acres, in the parishes of Quinton, Harborne, Edgbaston, and Northfield, and the land is chiefly agricultural. Forty landowners are concerned, their estates being very much intermixed. The City Council thought it necessary that a definite and comprehensive scheme of town planning should be prepared before the land had been built upon.

* * *

Southwark Cathedral Scheme.

In order to improve the entrance to St. Saviour's Cathedral from London Bridge Approach, it is proposed to construct an

arch and flight of steps from London Bridge over a footway into the cathedral grounds. The works committee of the Southwark Borough Council report that the adoption of the scheme would effect a desired improvement in the approach to the cathedral. The committee, however, regret they are unable to see their way to make any contribution towards the cost of carrying out the scheme.

* * *

Proposed Free Library for Lincoln.

The Corporation, after considering various sites for a free library, to cost £10,000, which Mr. Andrew Carnegie is providing, have definitely decided upon ground adjacent to the museum in Free School Lane. The scheme includes the setting back of the east side of the lane in order to give a 30-ft. roadway, while at the Silver Street end the roadway will be widened fully 10ft.

* * *

Trade Schools and Apprenticeship.

At the most recent meeting of the London County Council, the General Purposes Sub-Committee of the Education Committee recommended the appointment of an officer to organise and supervise the Council's system of trade schools for boys, and to deal with the apprenticeship and after-employment of the boys who leave the various schools maintained by the Council, at a salary of £400, rising by annual increments of £25, to £600.

* * *

St. Mary's, Spitalfields, to be Demolished.

Another London church is to be demolished. Under a scheme submitted to the King in Council by the Ecclesiastical Commissioners, and approved by the Bishop of London, the site of the Church of St. Mary, Spitalfields, with the parsonage house, is to be sold, and the proceeds devoted to the erection and endowment of a church in a new ecclesiastical district within the metropolitan area. The benefice of St. Mary is to be united to that of Christ Church, Spitalfields, and the portion of the parish comprised within the liberty of Norton Folgate is to be joined on to the parish of St. Stephen's, Spitalfields.

* * *

"Poilite" Asbestos Cement Tiles.

Messrs. Bell's United Asbestos Co., Ltd., who are the sole manufacturers of "Poilite" asbestos cement tiles in Great Britain, announce that they have in hand the following contracts for roofing (instances which indicate the wide use of the material for roofing purposes, in place of corrugated iron hitherto used):—Generating station at Scunthorpe, Doncaster, for Messrs. John Lysaght, Ltd., of Newport, Mon., and Doncaster; generating works for Messrs. Siemens Dynamo Works Co., Ltd., Stafford; the West Gorton Chemical Works, Manchester; various sheds for the Great Western Railway Co. at Swindon; the whole works of the Dulais Tinplate Co., Ltd., Portardulais, South Wales; sheds for Messrs. Richard Thomas and Co., Ltd., Llanelli.

* * *

Building Trade Unrest at Nottingham.

Although labour trouble rumblings in Nottingham recently have happily passed over without involving anything serious, the outlook at the opening of the New Year is by no means bright. There is decided unrest in the local building trade, the old question of walking time having again come forward in an acute form. A beginning was made last week with the bricklayers' new arrangement, under

which their pay for walking time will be discontinued, being compensated by an increase of a ½d. per hour in wages. The builders' labourers on the other hand are losing their walking time pay without any difference in wages. They are taking up a determined attitude, and as they appear to have the sympathy of other workers there are signs of a very serious disturbance to local trade unless an amicable settlement is effected.

* * *

Lectures on Architecture.

In connection with the University of London, Mr. Banister Fletcher, F.R.I.B.A., is now delivering a series of eight lectures on English Mediæval Architecture at the Victoria and Albert Museum, South Kensington, and another series on Ancient Architecture at the British Museum. Particulars of the lectures can be obtained from the hon. secretary, Miss Clair Ganart, 120, Cheyne Walk, Chelsea, S.W.

* * *

Important Discovery of Iron Ore in the Hebrides.

As the result of prospecting by a firm of Edinburgh mining engineers on behalf of a company of Scottish ironmasters, the presence of large quantities of iron ore has been discovered in the island of Raasay. Since that time the island has been purchased by the company, and it is expected that it will become a mining centre of importance. The island of Raasay is one of the Inner Hebrides, lying between Skye and the mainland of Ross-shire. It is 13 miles by 3½ miles in extreme length and breadth, and is for the most part killy and barren.

* * *

Extension of the Italian Hospital.

On Saturday last the Italian Ambassador formally opened the addition which has just been made to the Italian Hospital in Queen Square, Bloomsbury. The new buildings occupy a site formerly covered by two houses in Devonshire Street. They have been designed by Mr. J. D. Slater, of John Street, Bedford Row, the builders being Messrs. Roome and Co., Basinghall Street. The addition consists of a small block with basement, ground floor, and three upper floors. The basement will be used for the laundry, mortuary, and post-mortem room. On the ground floor will be the dispensary and ophthalmic department, and accommodation for nurses and others is to be provided on the other floors except the second, where the operating room will be situated.

* * *

Royal Academy Elections.

The forthcoming elections at the Royal Academy, says the "Morning Post," are causing considerable excitement in St. John's Wood and Chelsea. On the 25th inst. an Associate-Engraver will be raised to full rank for the first time since 1881, the year when T. O. Barlow secured similar honour. There are only two Associate-Engravers, Mr. Frank Short and Mr. William Strang. If Mr. Strang is elected he will be the eighth Academician Engraver, and the third who has won recognition as a painter; the others are Bartolozzi and James Ward. On January 25th also two ordinary Associates will be made, and two more on the 26th, as well as an Associate-Engraver. Two men have good claims: Mr. D. Y. Cameron, a painter-etcher of great distinction, and Mr. Muirhead Bone, a draughtsman-etcher of outstanding talent.

THE NEW GENERAL POST OFFICE.

BY SIR HENRY TANNER, I.S.O., F.R.I.B.A.

In his paper read before the Royal Institute of British Architects on Monday, January 2nd, Sir Henry Tanner gave a detailed description of the most noteworthy Post Office building in the kingdom. As he remarked at the outset, this building has been the subject of numerous articles in the professional and general Press. This journal has already dealt with the subject in considerable detail, and therefore the following extracts from Sir Henry's very complete account consist mainly of his observations on points that appear to be of special interest.

WHEN the first sketch plans for the new building were under consideration, Sir Henry inspected several examples of reinforced concrete construction, with the result that he came to the conclusion that the system was excellently adapted for the purpose of this building, and would economise both space and money, having in view the fact that Government buildings are exempted from the operation of the London Building Acts, and, therefore, full advantage could be taken of the new methods. Upon going into the matter of cost as carefully as possible, he found that for building in the ordinary way, with steel construction, the approximate cost, exclusive of fittings, etc., would be £355,000, but with reinforced concrete, £295,000 would probably suffice. The latter figure has proved to be correct, so that there has been an approximate saving of £60,000; and, apart from this, considerable space has been gained due to the great reduction in wall thicknesses. The cost per foot cube of the reinforced concrete structure was about 2½d. The sum of £295,000 is exclusive of engineering work, such as heating, lighting, lifts, telephones, conveyors, etc.

General Requirements.

In arranging preliminaries with Mr. Mouchel, representing M. Hennebique, Sir Henry stipulated that the columns were to be as few and as small as possible, in order to give the largest practicable unobstructed areas, that the beams were to be of a minimum depth, that the eastern platform was to be unobstructed by columns, that there must be a bridge connecting the two buildings at the second floor level, and that two subways were to be constructed under King Edward Street, connecting the new building with those existing. He arranged the superloads at 1 cwt. for the ground floor, and ¾ cwt. for the remaining floors, 65lbs. for the roof, and the factor of safety at 4. These superloads were arrived at after experiment. The north road was to be constructed to support a lorry with boiler weighing about 20 tons in all, and the remaining roads to support motor vans. The superload in the latter case was taken at 2 cwt. per foot superficial. Exclusive of engineering details, about 1,000 drawings were used.

General Description.

The building has two storeys below the ground, and these extend the whole length, including, therefore, the space under the eastern loading yard. The dimensions of the basement are 446ft. by 210ft., those of the sub-ground floor being slightly less. The general constructional arrangement of the sorting office or main block is that the principal beams run from north to south, and the subsidiary or floor beams from east to west, that is, the long way of the sorting office. The former are of arched form, and have a very light appearance. There are two open areas for light above the ground floor, and these have governed the disposition of the columns. There are five spans across the building, north to south, four of 35ft., and a centre one of 45ft., while in the other

direction there are seven of 34ft., one of 40ft., one of 21ft. 6in., and a cantilevered span of 12ft. 6in. at the east end.

The columns are square, and all are sheathed with steel to a height of 4ft. to take the impact of trucks, etc. They stand on reinforced concrete slabs about 13ft. 6in. square, which are in nearly all cases on the gravel. At the north-west angle, however, clay was found at a higher level, the gravel disappearing. The slabs are reinforced with bars ¾in. diameter placed at 8in. centres, and crossing one another, and are further reinforced with a mesh of smaller diameter bars at various levels, and stirrups.

The street and return fronts being constructed of stone, and it being impossible to include these in the first contract, the floors were supported by light pillars, which were afterwards built into the brick backing to the stonework. Reinforcing rods in floor slabs were left projecting in order to tie in the brick and stonework. The upper floors were constructed similarly to those of main block, but steel bars and expanded metal were used below the beams to give flat ceilings. The stairs in this part of the structure have treads, risers, and paving to the landings of York stone. Externally the concrete walls were covered with a thin rendering of cement, practically applied in one coat, as the

skimming was not allowed to dry before being finished with a wooden float. This rendering was gauged in the proportion of 1 cement to 2 of sand. It would have been better with a larger proportion of sand. The tendency for hair cracks to appear seems to increase with the strength of the mixture. The projections had been roughly formed in concrete. The cornices, however, were cast in moulds (*in situ*), the faces of which had been sanded; the modillions were cast down with steel rods projecting from them for attachment. These were laid in the moulds and the cornices cast upon them.

Arrangements for fixing casings for wires, lifts, guides, etc., were carefully considered, and many thousands of wood plugs left in the concrete as the work proceeded; but in many cases engineering requirements were afterwards altered, and the architect's experience on this building led to the conclusion that much expense would be avoided if such work were left until the engineering contractors appear on the scene and the necessary holes cut where required by them.

Cement Tests.

The cement used had to be superior to the usual British standard quality. It had to pass through sieves of 14,400 meshes per square inch, leaving only 10 per cent. residue; while briquettes were to break with not less than 500 lbs. per square inch after seven days, 600 lbs. after fourteen days, and 650 after twenty-eight days; and when made with 1 to 3 of sand, 130 lbs. for seven days and 200 lbs. for twenty-eight days. The average results of the tests were considerably higher than the specification demanded, being 587 lbs. and 702 lbs. for neat cement, and 196 lbs. and 276 lbs. with sand at seven and twenty-eight days



NEW GENERAL POST OFFICE, LONDON: FACADE TO NEWGATE STREET.
SIR HENRY TANNER, I.S.O., F.R.I.B.A. (H.M. OFFICE OF WORKS), ARCHITECT.

respectively. There were also tests by boiling. The specific gravity was not to be less than 3.10. Thames ballast was used throughout.

The second contract consisted of the Portland stone and granite work, and the third contract the remainder of builder's work, including internal brick divisions, joinery, plastering, tiling, sanitary work, painting, etc. These two contracts were also carried out by Messrs. Holloway Bros.

Architect and Engineer Co-operate.

Having had experience of several methods of procedure in regard to reinforced concrete work, the author could come to no other conclusion than that the method pursued in this case is by far the best. It is of the greatest possible advantage that the architect and the engineer should be able to work together, and this cannot be done when designs and tenders are called for. Besides, it is obvious that with such procedure if the engineer and his contractors are to hope for any success in competition for work, the steel and concrete must be cut down to the minimum, thus increasing the chances of failure. Much time is lost in the necessary examination and comparison of the designs submitted, and this, with vacant sites, means the loss of more or less money. Such a course is not taken with ordinary steel construction, and it is not usual to ask architects for designs and tenders, which would practically amount to the same thing. Moreover, under such a system, it is impossible to obtain a satisfactory schedule from which variations can be properly valued. The time must come when reinforced concrete will be incorporated in the ordinary bills of quantities and dealt with in the same way as any other part of the construction, and there are now any number of contractors quite able and willing to undertake and to carry out such works in a satisfactory manner.

With regard to materials, cement can now be regularly obtained to take a stress of 20 per cent. greater than the British standard, and Sir Henry could not see why this should not be taken into consideration. Such cement has been used throughout this building and in the test blocks.

The construction of the false work should be of a substantial character, so that no movement takes place under ramming, otherwise concrete partially set may be disturbed.

In regard to expansion and contraction, these were only observed when the building was considerably advanced, but without windows and internal warmth, and therefore entirely exposed to the outside temperature. In January, 1909, there was a severe frost, and contraction was evident at the eastern end of the bridge, and in the sub-ground floor at the rear of the front building, but on the return of warmer weather the fractures closed, and have not caused any trouble since the building has had the windows in and been otherwise protected. No special provision was made for expansion and contraction, and no movement has been observed in the area of floors.

Supervision is of the first importance, and three clerks of works were employed during the greater part of the time.

Discussion.

Sir Matthew Nathan, proposing a vote of thanks, referred to Sir Henry Tanner's connection with the Office of Works for the last forty years. Twenty-five years

had now passed since he designed the Post Office at York. Sir Henry's excellent planning was observable in the building occupied by the Postmaster-General, and the building known as Post Office North; and it was evident also in the Mount Pleasant sorting office, and in the block for the Savings Bank at West Kensington. Referring to the new building in Newgate Street, the speaker commended the boldness of applying reinforced concrete to a bigger construction than it had been adapted to in any other country. In the year 1888 he (the speaker), when an assistant engineer at the Works Department in India, had been called in to construct a battery at the mouth of the Rangoon River. In the concrete raft he embedded a number of contractors' rails, which acted as a reinforcement to the concrete. This method, of course, was very different from that described by Sir Henry Tanner, but the principle was the same.

Mr. Searles Wood alluded to Sir Henry's courtesy in permitting architects to inspect the building during course of erection.

Professor Beresford Pite said they felt as a body that the interests of the nation were in entirely satisfactory hands when under the control of Sir Henry Tanner; and while they were amused at the liberties taken with the Building Acts, they had never felt any doubt as to the ultimate success of the experiment. The future, he was assured, would go back to the building as a landmark in construction. With regard to a technical point, would not the possibility of the expansion of homogeneous building be somewhat serious? Sir Henry spoke of trouble of this kind, but said that it had not subsequently reappeared. Having referred to the precautions taken against expansion in London Bridge, would it be possible, continued the speaker, for expansion to take place without splitting the building? In the new building, refinement of outline had not been entered into—indeed, it would have been artificiality had it been there.

Sir Aston Webb observed that Sir Henry's perfect revelation of the changing of the ways must revolutionise all ideas of building construction, and they were greatly indebted to him for the information. This form of construction necessitated the same treatment of the street frontage as the general body of the building, and he hoped Sir Henry would show how concrete building could be honestly turned into an architectural success.

Mr. Max Clarke observed that Sir Henry, having a free hand, could do what others dared not do unless constructing a Government building. The cost of the concrete bedding was stated in the paper to be 2½d. per ft. cube, but he had since obtained from Sir Henry the admission that this was the cost of the ferro-concrete work by itself. The total cost was 7½d. altogether, and remarkably cheap building. But why did Sir Henry adopt a calculation with regard to cement different from the Standard Specification? The building had been built outside the Standard Specification, and had no reference to it. He would like to know whether the concrete was put in "wet" or "dry." An extraordinary amount of care had to be taken to prevent chips of wood and shavings from mixing with the concrete. The Kodak building in America collapsed through wood getting into the columns. Supervision, therefore, was very essential to the safe construction of reinforced concrete.

Mr. Ernest Franck desired to know whether the front was related by rods to

the floors themselves, or whether a separate foundation was provided at the basement. The cement used, he continued, as clearly shown by tests, was of considerably higher efficiency than that of the British Standard Specification. Referring to the point raised by Professor Pite, the speaker said that the building had been designed so that no fear of expansion need be entertained. Sawdust and shavings could be easily washed out with a hose. The failure of the Kodak building was due to the presence of large blocks of wood, and could not be attributed to sawdust or shavings.

Mr. Meik, in the course of a few observations, declared in favour of a face rendering of a 2—1 mixture of cement and sand, as pure cement was more apt to contract.

Professor Adams said he noticed that the beams across the first and ground floors were arched, but the end arched beams had no abutment. So far as his inspection had gone, this was the only constructional flaw.

Mr. H. H. Statham said that during an inspection of the building only that morning he had noticed, among other things, the architectural treatment of the loading yard, where the modillions of the cornice were of reinforced concrete and resembled those in the stone front. This, he considered, was not a satisfactory application of the material. One of the arched beams, he had noticed, had no abutment. Were these beams really acting like an arch and exerting a thrust? He doubted whether the arch added anything to the strength of the structure.

Mr. De Vezian observed that expansion and contraction had necessarily to take place, and in the G.P.O. building it occurred within itself. In a large warehouse in Manchester had been constructed a roof 2,020 ft. in length which had never given any signs of expansion. They need not, therefore, anticipate any troubles arising from changes in the temperature. The arched beams exerted no thrust upon the columns—they simply acted as continuous beams, and there was no need for abutments.

Mr. Leonard Stokes said that although Sir Henry worked under advantages, the work could quite possibly have been brought to a less successful termination. Ferro-concrete, he believed, carried sound, and on this account would probably be found disadvantageous for domestic work. The chimney wholly in reinforced concrete interested him, as the only other example of which he knew had cracked by the heat and had given considerable trouble.

Sir Henry Tanner, replying, said he could take little credit for the reinforced concrete work, which was entirely the design of the late Mr. Mouchel. The reinforced concrete beams were constructed as cantilevers. The alterations in the Building Act would, he thought, enable architects generally to erect reinforced concrete buildings similar to the new G.P.O. If structures erected in this material were large, they would pay, but if small they were not worth doing. Where floors were intended to take a load of 2 cwt., they had easily taken 9 cwt., with perfect safety, the utmost deflection being one-thousandth part of a span. He preferred concrete to be put in "dry," but it could not always be done. The stonework was on no special foundation, but all related to the reinforced concrete work. No trouble had been experienced with respect to sound; the floors were all covered on top with wood blocks, and in the front block were false ceilings.

HYGIENIC PLANNING OF SCHOOLS.

BY PHILIP A. ROBSON, A.R.I.B.A.

In the Journal of December 23th, p. 667, we gave, under the heading, "The Preliminaries of School Planning," an abstract of the first portion of Mr. Philip A. Robson's paper on "The Hygienic Planning of Schools," read before the Royal Institute of Public Health. The remainder of the paper, dealing with important details of the subject, appears below.

General Planning.

In order to plan with certainty, the architect requires to know (1) the numbers in the proposed school; (2) how divided, that is, the number of departments, and into what sized classes; and (3) if possible, the desirability of more than one floor or étage. As regards numbers, and their subdivision, the Board of Education does not now approve of schools larger than from 1,000 to 1,200, except under special circumstances, though that fact is not clear from the current Code, which speaks of departments of from 350 to 600 places, leading one to suppose that a school of about 1,500 scholars in the usual three departments was not an uncommon occurrence.

A point which affects the planning is, whether children under five years of age are admitted. Personally, I consider they tend to disorganise the proper work of the school, and some separate building should be provided for these infants in districts where they cannot be dealt with at home.

Classrooms.

The next point is the number of children in each class-room. I believe from forty to forty-eight will be found the most suitable, but, for the sake of elasticity, perhaps one or even two rooms for thirty-two

only might prove advantageous. Whether these are for mixed classes, or for boys or girls separately, does not affect the point. A class-room for forty-eight will consist of six rows of four dual desks, each being 3 ft. 4 in. wide, and having a gangway between each of 1 ft. 4 in. Thus we get four 3 ft. 4 in., and five 1 ft. 4 in., or 20 ft. for the width of the room by 24 ft. long, allowing 10 ft. of area per child, or 480 sq. ft., which is the Board of Education requirement. This room must be 13 ft. high, which only gives 130 cubic feet per child. The author did not regard this as sufficient, and deals with the cubic-content unit later. It may be noted *en passant* that this 10 ft. per child used to be 8 ft., and it was considered a great step to have put behind us the then accepted area of 6 ft. per child as held in Berlin. It took years of struggle to get that 8 ft. increased to 10 ft.—which it now is—with the exception of infant rooms, which are passed at 9 sq. ft. per child.

In elementary schools, the class-rooms should open directly from the hall, unless it is desired to follow the French plan of placing windows on both the right and the left side of the scholars—on the left for illumination mainly and on the right for ventilation.

It is a wise piece of planning to provide an occasional desk accommodating three pupils instead of the usual two. This enables a little elasticity in numbers to be placed at the command of the teacher which he will find valuable in practice. When the class is crowded, all three seats would be used, or as many as may be necessary. If a single desk be used, it is best not to place it next to the window-wall (the lighting is bad there unless the window sills be very low), and it should be kept 6 in. away from any wall. A gangway of at least 12 in. is necessary against the back wall—partly for a passage-way and partly to prevent the children from damaging the jointing of the glazed bricks or the hard cement dadoes preferred by some authorities. The seats need not be placed on stepped platforms, but then the teacher's desk should be raised on a dais.

These areas per child are graduated according to age: 9 sq. ft. for infants; 10 sq. ft. for children up to about 16; 17 to 18 sq. ft. for scholars in secondary schools. Obviously, therefore, either the 10 sq. ft. is too little or the 18 sq. ft. too much. Why must a boy of 16 live in a room and occupy the space of 10 sq. ft., and when he is 17 be suddenly advanced to occupy 17 to 18 sq. ft. instead of 10?

The author suggested a further graduation from a minimum of 10 sq. ft. up to a maximum of 16 sq. ft., which is ample for any hygienic reason which may be advanced.

A cubic unit is a more difficult matter to determine. The usual unit in German and American schools is about 164 cubic ft. per child, so that with 14 sq. ft. per child



DETAIL OF CEILING IN ROOM ON FIRST FLOOR, H.M. OFFICE OF WOODS, FORESTS, AND LAND REVENUES, WHITEHALL, LONDON. JOHN MURRAY, F.R.I.B.A., ARCHITECT.

and a room 12 ft. high, we get 168 cubic ft. per child, which is 4 ft. more than the American or German average, but less than the Canadian. It might be wise to limit the distance of the furthest child from the window by stating that *the centre of the desk furthest away from the window shall not be more than one and two-third times the height of the room distant from the inside of window wall in the absence of supplementary light.*

This consideration naturally turns attention to the

Lighting of Class-rooms.

Undoubtedly there is a tendency in the present age to impairment of the eyesight. It is, therefore, of the highest importance that class-rooms should be lighted scientifically. Bad lighting—both artificial and natural—has, without doubt, been responsible for the damage of good vision in recent generations. If unwell, a child may easily damage the eyes by persistent over-use. But assuming that a child is healthy, well-fed and clothed, the following rules are useful:—(1) One-sixth of the floor area in *actual clear glass* is necessary for rooms facing south. (2) One-fifth of the floor area in *actual clear glass* is necessary for rooms facing east and west. (3) One-fourth of the floor area in *actual clear glass* is necessary for rooms facing north. Specially note that *window-space* is not *glass*. (4) Any room 25 ft., or more, wide requires subsidiary light. (5) Left-hand light is important. If this be impossible, then right-hand is the next best (top-light being vetoed). (6) No windows for lighting purposes should be in front of either teacher or scholars; but a subsidiary light in the corner behind the scholars is sometimes imperative. (7) Class-rooms must be 10 ft. high; 12 ft. is usually sufficient up to thirty-six children, but for forty or more a greater height is necessary (according to the present Rules). (8) The higher the point from which the light comes the better. Hence, 12 in. or less should be allowed between the top of the window and the ceiling. (9) 3 ft. 6 in. to 4 ft. is the proper height of the glass line from the floor. (10) To increase the light the ceilings should be kept white, the walls pale grey, grey-green, or pale buff, and the ordinary woodwork white enamel. (11) Heavy piers between the windows, also large transoms and multitudinous little panes are all to be avoided. (12) Artificial lighting should be arranged so that the light falls as nearly as possible on the desks as with natural lighting. Thirty candle-power per square of 100 ft. super of floor area (often allowed) is insufficient; fifty is necessary, but a shaded sixty is best. At a height of, say, about 8 ft. from floor, and with rooms about 12 ft. high. (13) Rooms which are overlighted prove a great strain on the eyes, they are difficult to heat in the winter, and are over-hot in the summer. (14) The object of all natural lighting should be to attain 1/1000 of the outside illumination, or an average of one candle-foot (*i.e.*, a good reading light), and the artificial lighting should approximate as nearly as possible to this standard. (15) Unprotected lights should not be used. (16) Governors are necessary, either on the fitment or on the meter, if the pressure is irregular (*i.e.*, gas). (17) All lights should be examined periodically and kept clean.

The Vexed Question of Halls.

We now come to the vexed question of halls. First, it may be premised that a hall is not an absolute necessity, but some room large enough to accommodate the

whole school at once is desirable for the purpose of daily assembly. This is the great difference between the planning in America and that of our own. In this country daily assembly is the rule. In Germany and America it is not. In both these countries the hall is often found on the top floor, and is frequently used as a gymnasium. In England we regard the hall as a keynote of the plan, with the class-rooms opening therefrom as much as possible.

The size of the hall will depend on the numbers of the school, and the area is $3\frac{1}{2}$ to 4 sq. ft. per child. In secondary schools, principally because its use is intended for examinations and entertainments, 6 to 8 sq. ft. is the rule.

In elementary schools the axis of the top-lighted hall is best placed north and south. This will allow the class-rooms, placed on two or three sides of it, to get the sun during some part of the day, with their windows facing south, south-east, and south-west. Most schools now have central halls, and as to whether the school is situated in a country place, where land is cheap and there is plenty of space, or in a town where land is dear, will depend its situation. In some of the newer schools, as those in Staffordshire and Derbyshire—all on the ground floor—plans have been utilised which give the class-rooms, windows on each side, and a central hall connected with them by corridors, and not opening from the central hall direct. With a view to physical exercises this is excellent. In bad weather each class may be separately exercised in the hall without disturbing any other.

One of the best regulations of the Board of Education is that (1909) whereby every school has to do physical drill work as part of the ordinary school curriculum. Keen observers knew that this regulation would of necessity be enforced, as the race in the towns, in spite of a steady influx from healthier bred country folk, is deteriorating, and they welcome it accordingly.

It will probably now be found feasible to deal with the south windows to class-rooms as French casements, and so practically to make the schools "open-air" in suitable weather.

Cloak-rooms.

Cloak-rooms are generally too small, badly lighted, ill-heated, and ill-ventilated. In one-storey buildings I am in favour of a top-light, with inlets of warmed fresh air and proper outlets; but where there is more than one storey it is usual to light them at the ends.

All lavatory basins are best placed in separate rooms when funds allow. No floors inside a building should be of asphalt, as has been recommended on high authority, because the condensation of moisture in the air renders its surface damp, dark, insanitary, and unpleasant. Asbolith, Euboeolith, or Doloment are more satisfactory. Floors of these materials may be cleaned with either water (not hot) or Ronuk, and the junctions of walls and floors rounded and carried up the walls an inch or two to meet the tiles, glazed brick, or granolithic facings.

The cloak-rooms should never be passage-ways to the school-rooms or class-rooms, but should be entered from a corridor. Careful planning is necessary to obviate crowding and confusion at dismissal, therefore separate means of entry and exit should be arranged, so that a child may get his garment and go on and out, not retracing his steps, as an ordinary part of the school drill.

The pegs and supports are best of metal, painted with metallic, non-rustable paint, or electro-plated, but these latter are very expensive.

The *minimum* width of the gangways in cloak-rooms is given as 4 ft., but I think 5 ft. will be found much better, especially for girls.

The *minimum* space per child is 12 ins. This will be sufficient for boys, but more is desirable for girls. The centre divisions should be wired to prevent clothes back to back from touching each other. It is not necessary to have doors to the cloak-rooms, except in unusual circumstances, *e.g.*, where things get stolen or where the cloak-room is not on a level with the school, and therefore not under observation. But great care must be taken that the smells from drying clothes do not enter the school buildings proper.

Heating and Ventilation.

Low-pressure hot water is usually best for schools, but where a very large building has to be managed from one central boiler, low-pressure steam is essential.

In any high or medium pressure system it is best not to expose the pipes, as, in the case of overheating at any time, the particles of dust on the pipes get burnt, wafted about the rooms, and may cause irritation of the children's throats.

A very good rule for heating is to allow 1 sq. ft. of heating surface to each 100 cubic ft. of air space, and add to this 1 sq. ft. of heating surface to each 6 sq. ft. of glass area. Generally this will be found to give 60° F. when the external temperature is 30° F. This applies to rooms about 15 to 16 ft. high.

The boiler is the important matter in a heating system. I need hardly say that all material should be British; it is better made, lasts longer, and is cheapest in the long run. Buildings as large as 225,000 cubic ft. may be heated from one furnace by low pressure.

The best and strongest shape of a boiler is circular with domical ends. Economy is attained by an ample flue surface or height of furnace above the fuel, and by casing the boiler, etc. in asbestic material, and a large furnace gives the greatest power. It should especially be noted that the fire-bars should be thin and deep for efficiency and economy; $\frac{1}{2}$ in. wide by 3 in. deep, with $\frac{1}{2}$ in. space between each will be found to make clinker least, and another aid to this end is a trough of water about 4 to 5 in. deep.

The furnace-doors must have a sliding shutter to admit air over the fuel for deep fires. A perforated baffle plate is also necessary to keep this door cool. Ineffective circulations are often traceable to a bad boiler. The radiators are best of the hospital type, *i.e.*, without any ornament, perfectly smooth, rounded, and with the loops wide apart for cleaning purposes.

Of course, there must be no dips in the rising main, or air-locks will arise and impede the circulation. It is also good economy to keep the furnace going all the week till the Saturday morning, when the school is shut and it can be cleaned thoroughly.

Ventilation is a much more intricate matter, and the various systems each have their advocates.

In the author's opinion, the nearest approach to natural ventilation which can be devised is best, because it is a mistake to train children to think that fresh air is disadvantageous, and that windows must be kept shut, and it is only rarely

in very bad atmospheres that it is imperative to filter the air and force it through the building by a system known as "the plenum." Moreover, in this system all parts must be cleanable, and its cost is prohibitive, as a rule, with the exception that the fuel bill is usually moderate. But a skilled man in attendance is necessary.

The usual school window, as near the ceiling as possible, is an admirable way of admitting air; the top falls in, and the two sashes admit air at three other points. It is as well to prevent draught by placing an upwards deflector on the sill; and ventilating radiators are also employed, as well as Tobin tubes in the corners. The outlets, however, may be well aided by electric fans or gas jets at the highest points. Dr. Kerr, in a report to the Education Committee of the London County Council in 1904, recommends a combination of the plenum system and exhaust with an air supply of 1,500 cubic ft. per child per hour, or about eleven changes per hour. The author regarded this as only necessary in certain places, and considered that if the natural means of ventilation are scientifically utilised (1) by the architect in the first instance, and (2) by the teacher in the second, that it is rarely necessary to use the plenum system in schools. It should be possible, however, to aid the natural system, when necessary, by electric fans, etc. The following points are of importance:—

The *minimum* per head is 2½ sq. in. for inlets, and this necessitates induced draught by means of suction at the outlets, an electric fan being very useful at the start.

Systems which dry the air are bad, as also are those which create draughts along the floor: 1,500 cubic feet of air per head per hour is the lowest necessary provision. To avoid draught 6 ft. per second is the most rapid passage of air permissible. Fireplaces have been condemned in some quarters as dusty and dirty, but they are most useful as ventilators, as they aid the ventilation when most needed. It is necessary to maintain the temperature of the rooms at from 56° to 60° F. when it is freezing outside, and this must be by warmed, comparatively pure air—say 6 parts in 10,000 of carbonic acid gas.

The temperature should never be allowed to fall below 55° nor to rise above 63° F. Thermometers should be kept in every room for the purpose of recording regularly on a chart the temperature at, say, 8.30 a.m. by the caretaker, 12 noon and 4 p.m. by the teacher of each classroom.

Sanitation.

Numbers of closets, etc., per child are given in the proportionate scale in the Building Rules. A good drainage system must be simple, in straight lines, and self-cleaning as far as possible. But it must be remembered that no drains are automatic—they all require periodic cleaning.

I do not think it wise to combine both sewer-water and rain-water in one system, because of the danger which arises when the water in the traps of rain-water gullies evaporates or freezes. These traps may then become ventilators for the drain, and even the sewer. But, *per contra*, when it is the duty of someone to see that gullies are properly trapped, in frosty or very hot weather particularly, the rain-water flushes the sewer.

Baths, sinks, and lavatories should discharge under gratings over properly trapped gullies.

The ventilation of the drain should be in the disconnecting chamber at some point near to the main sewer. A trap with a good seal should prevent sewer-air from entering the drain. The fresh air inlet should have a protected mica-flap, to prevent it becoming anything but an inlet, and a long outlet should be provided at the highest point of the system. If more than one outlet is arranged, then the size of the inlet should be increased proportionately.

A new mica-flap inlet has just been introduced which prevents boys, etc., from meddling with it, which is a great temptation, as it is generally placed at a convenient height to receive orange-peel, etc.

Drain pipes should be as small as is consistent with self-cleansing gradients. A handy rule is that the fall for a 4-in. drain is 1 in 40; a 6-in. drain 1 in 60; a 9-in. drain 1 in 90. These velocities give 2½ ft. to 5 ft. per second, the supply of water being ample. The sanitary arrangements in elementary schools are kept in the playground; in secondary schools they are attached to the schools, but disconnected.

Conclusion.

In this short paper I have been obliged to exclude many interesting topics, such as open-air schools, swimming baths, etc. How far a child, for instance, should be clothed, fed, and washed by the State is a question of economics. It is obviously impossible to educate a child properly who is unfed, thoroughly chilled by insufficient food or clothing, or who is very dirty. I am of opinion that the German system should be followed with regard to this, in making washing, spray bathing, and certainly swimming, a regular drill; but the author was of opinion that no child ought to come to school either so dirty as to necessitate his being thoroughly washed or requiring feeding. It is outside this paper to deal with such matters, but if a child should arrive at the school in this state it does not seem to me the business of an educational authority to deal with it, beyond excluding him and reporting the fact to the sanitary authority.

Broadly, in this connection, the author would refer those interested in Eugenics to the papers issued under the auspices of the Francis Galton Laboratory for National Eugenics, which have been prepared with extreme care and accuracy. Every school should now have a properly equipped doctor's room, and, after the lapse of a decade, most valuable data should be available from the medical reports.

The ideal school should be an education in itself, in orderly planning, in proportion, which arises from orderly planning—eurythmy, as Vitruvius calls it—and in general ideals. To build schools like glaciars in angularity and eccentricity, or resembling barracks in their barrenness, is to deprive the children of what may rightly be called their birthright of beauty.

LETCHWORTH GARDEN CITY.

In the annual report of the First Garden City, Limited, it is stated that during the past year the net loss on the revenue account was reduced from £3,692 to £1,676—a reduction of £2,016, or more than twice the previous saving. Immediate further capital is required, however, for development owing to the advent of four new industries, and it is estimated that at least

£20,000 will be required for necessary extensions in order to cope with a rapidly increasing population. The number of new houses, shops, and public buildings built or building at November 15th, 1910, was 1,292, and 42 factories and workshops, compared with 1,171 houses, shops, and public buildings and 35 factories and workshops on the same date in the previous year. Copper smithing, corset making, commercial and pleasure motor-car building, manufactured joinery, are all new and important additions to the industries of the town. At the recent annual meeting the chairman (Mr. J. E. Champney) further pointed out that an ordinary building estate sells the freehold as fast as its expenditure on making roads, drains, etc., creates building land; these successive sales provide the money for further development. "We, on the contrary," he remarked, "are trying to keep the freehold in our own hands, and are, in consequence, driven to make increased demands for new capital, otherwise the development of our project must and will stop." The Letchworth Parish Council has taken over the provision of an efficient fire brigade, and "with a population of 7,000," said Mr. Champney, "we may fairly indulge in visions of the future when the chairman of the Urban District Council of Letchworth becomes the first mayor of the borough."

CEMENT CONCRETE VATS AND TANKS.

Impervious, odourless, tasteless, and sanitary vats and tanks for buttermilk, wine, oil, pickles, sauerkraut, etc., can be constructed of reinforced concrete, the reinforcing to be designed by a competent engineer, provided the interior surfaces are treated as follows:—

After the forms are removed, grind off with a carborundum stone any projections due to the concrete seeping through the joints between the boards. Keep the surface damp for two weeks from the placing of the concrete. Wash the surface thoroughly and allow to dry. Mix up a solution of 1 part water glass (sodium silicate) 40° Baume, with 4 to 6 parts water, total 5 to 7 parts, according to the density of the concrete treated. The denser the surface the weaker should be the solution.

Apply the water glass solution with a brush. After four hours and within 24 hours, wash off the surface with clear water. Again allow the surface to dry. When dry apply another coat of the water glass solution. After four hours and within 24 hours, again wash off the surface with clear water and allow to dry. Repeat this process for three or four coats, which should be sufficient to close up all the pores.

The water glass (sodium silicate) which has penetrated the pores, has come in contact with the alkalies in the cement and concrete and formed into an insoluble hard material, causing the surface to become very hard to a depth of ½ to 1 inch, according to the density of the concrete. The excess sodium silicate which has remained on the surface not having come in contact with the alkalies is soluble, therefore easily washed off with water. The reason for washing off the surface between each coat and allowing the surface to dry, is to obtain a more thorough penetration of the sodium silicate.

It is obvious that concrete surfaces so treated, if hard, impervious, and insoluble, have been made impervious, tasteless, odourless and sanitary.

ARCHITECTURE CONSIDERED AS PLAN AND SECTION.

BY H. H. STATHAM, F.R.I.B.A.

The following is the substance of a paper read by Mr. H. H. Statham, F.R.I.B.A., on January 9, 1911, before the Architectural Association.

MANY years ago there appeared in the "Westminster Review," in the days when that periodical was an intellectual power in the land, a remarkable article on "Winckelmann and Greek Art," which to some extent coloured my feelings about art for the rest of my life. The author, as I learned long afterwards, was Walter Pater, and the article was probably his earliest essay on æsthetic subjects. In the course of it, speaking of the distinction between architecture and the arts of sculpture and painting, he said:—

An Abstract Conception of Architecture.

"The arts may thus be ranged in a series, which corresponds to a series of developments in the human mind itself. Architecture, which begins in a practical need, can only express by vague hint or symbol the spirit or mind of the artist. He closes his sadness over him, or wanders in the perplexed intricacies of things, or projects his purpose from him clean-cut and sincere, or bares himself to the sunlight. But these spiritualities, felt rather than seen, can but lurk about architectural form as volatile effects; to be gathered from it by reflection; their expression is not really sensuous at all. Architecture is the mode in which the artistic effort centres."

Here was a totally abstract conception of architecture, as the walling up and covering in of a space, and as capable of poetic expression from that point of view alone, independent of any considerations of style or detail. That sentence, "He closes his sadness over him, or wanders in the perplexed intricacies of things," has haunted me ever since. If you come down to the primary elements of architecture, does it not consist in laying out a plan in an effective manner, and in covering in that plan in a manner at once effective and structurally sound? I am asking you to consider architecture this evening from that point of view. There is a moral connected with it; but the moral, according to traditional usage, comes at the end.

Character in Plans.

No architect worth the name ever lays out a plan without having present in his mind at the same time the manner in which he means to roof it in; and the mere aspect of a plan on paper at once sets the mind thinking as to what the section of the building would be. But even apart from that consideration, a plan, merely a plan, has its own expression and its own suggestiveness. Does not the typical Egyptian plan at once suggest an architecture of solemnity and mystery, in which the whole plan is an anticlimax, and the mystery narrows and closes round us the further we penetrate into the recesses of the buildings. How striking it is, too, to compare the typical plans of the Egyptian, the Greek, and the Gothic temple! Is not the prevailing character of the religions to which they are dedicated expressed in the three plans? The Egyptian the plan of mystery, closing in the more as you enter it, and showing nothing externally but the entrance pylons and a blank wall; the Greek the plan of rationalism—a columnar

display on the exterior, and a wide interior plan neither enlarging nor diminishing as you enter it; the Gothic the plan of aspiration, widening and enlarging to its inner and more sacred extremity. Even in comparing the archaic Greek temple with the Parthenon, we see the progress from the long narrow *cella* of Selinus to the broader one of the Parthenon, significant of the development in the direction of a more cheerful and rational religious rite.

The Plan and the Roof.

The three types of plan referred to just now tell their own tale as to roofing. The Egyptian and Greek plans are manifestly the plans for flat roofing; the small inner apartments in the Egyptian plan might be vaulted, but there can be no sense in the forest of columns distributed over the floor of the larger halls except to uphold a flat roof; and the Greek *cella* shows no abutment for an arched roof. The Gothic plan, on the other hand, proclaims the preparation for the arched roof; we see the change in the walling, from Romanesque to Gothic, as the vault is adopted and the masses of wall pivot about and take their stand at right angles to the thrust of the roof.

As an example of the crude fashioning of a plan without any order or any dominant idea, and also of the effect of roofing upon plan, we may take Khorsabad. This is a mere warren of straggling apartments grouped on no system; it is true that this was a palace for habitation, not a temple; but why are the rooms all long and narrow? Because they were roofed by a crude system of vaulting, erected without centering, and which could not be carried out over a wide space. This is essentially an uncivilised plan; what a difference when we turn to the plan of Spalato, with its wide spacing and symmetrical arrangement! In this latter point, however, it is surpassed by the plan of the Escorial. It would not be a bad subject for the Tite Prize, to give the competitors the plan of the Escorial and the mission to treat it in the best Italian manner they could. Another example of a great plan is Inigo Jones's Whitehall Palace, one of the finest schemes for a great palace that have ever been conceived, like the Escorial, impressive even on paper; notice especially the splendid idea of the columned circular gallery as the State approach to the private apartments of the Sovereign; an idea unique, as far as I know, in architecture. If anyone objects (as many certainly would have objected thirty years ago) that the executed portion of the building is too cold and formal in style, I reply that that does not affect the grandeur of conception of the plan. But, in fact, Inigo Jones's severe and scholarly style of classic architecture was exceedingly suitable to the dignity of a great royal palace, and had his design been carried out, London would have possessed the greatest Renaissance building in the world.

A Spoilt Opportunity.

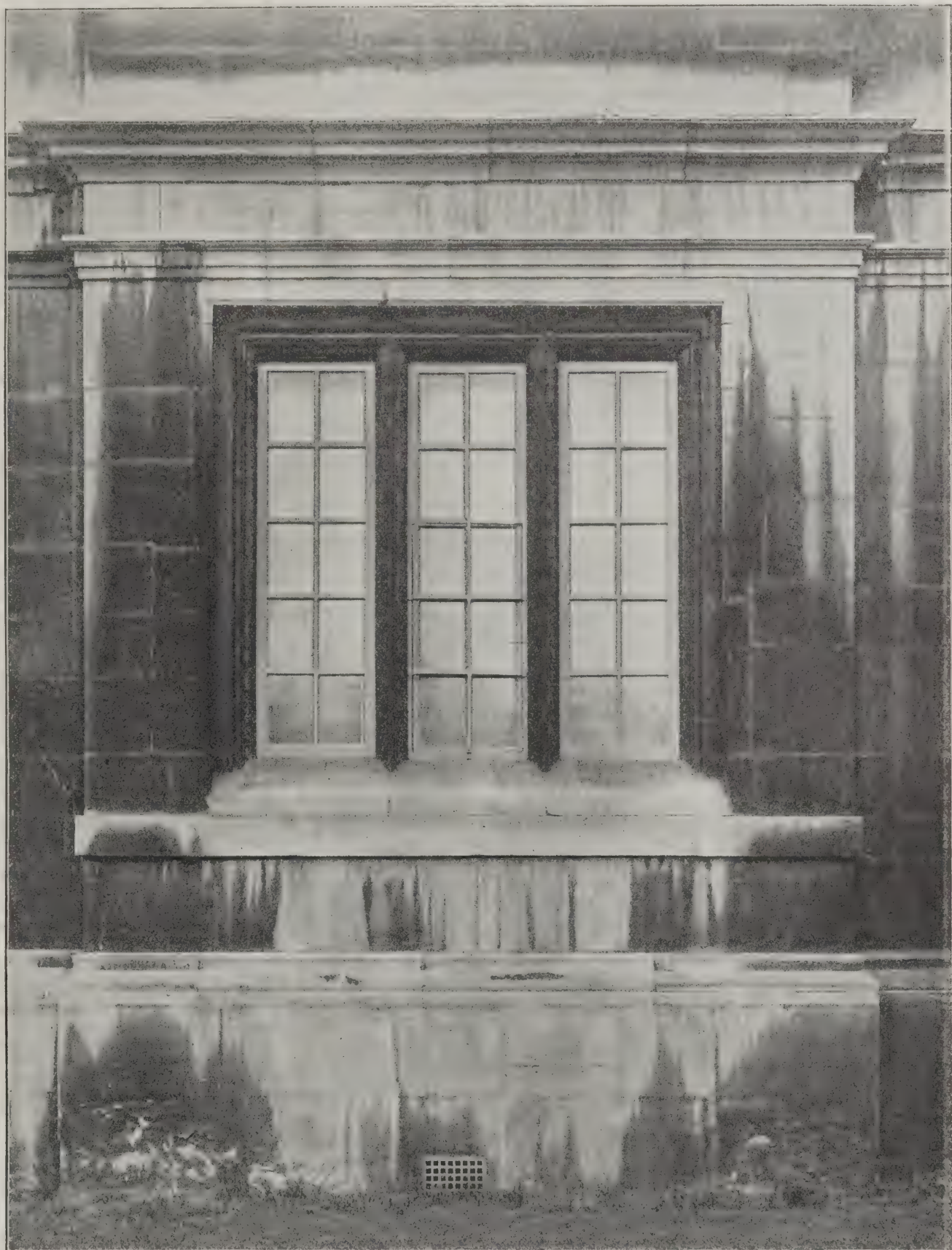
One has only to turn to the plan of Versailles to see how an architect who was not a great genius could spoil an even finer

opportunity. For a great royal château Versailles has an absolutely ideal position, with the great courtyard rising with a gentle slope up to the entrance front, and the other façade overlooking from a wide terrace the finest park in the world. But there is nothing great about Versailles except its situation. The detail is dull and mechanical; but even were it better the treatment *en masse* would have spoiled it. This largest palace in the world is entered in a corner, and does not contain a single staircase of spacious and monumental effect, and half the effect of the park façade is lost by the blunder of bringing out the centre block in an immense projection, so that from no point of view can one get the effect of the whole length of the façade. A very long façade may be accentuated in the centre by a slight projection, but to thrust a great mass of building out from the centre is fatal. Any projections on such a scale should be at the wings, not at the centre. Versailles, in fact, is an immense plan with no leading or dominant idea except that of mere size.

The typical plan of a mosque, as seen in the plan of Ibn Touloun, is an example of another kind, of the equal distribution of points of support with no leading feature. This was for practical reasons. A mosque, it must be remembered, is not a temple in honour of the Deity; in the Mahomedan creed, "the most high dwelleth not in temples made with hands"; it is simply a shelter and a place of seclusion for the worshippers, who especially congregated at the inner end of the enclosure, to pray in the direction of Mecca; consequently this portion was to be completely covered in, but for practical, not for architectural reasons; so that the equal distribution of points of support supplied all that was wanted. At Cordova the idea was carried further, and the whole area covered in, with great richness of decorative treatment; but the idea was still the same; it is a shelter, not an architectural temple.

Mediæval Planning.

In the Christian church there was from the first a leading idea in the special importance and sanctity of the east end (using the word in its ritual sense, for many of the Italian churches were not orientated). But the plan and section of the early Basilica church suggested no special architectural motive beyond that of the perspective effect of a colonnade or arcade leading up to the apse. If we take the plan of the old St. Peter's Basilica, there is nothing in it to suggest anything in the architectural treatment beyond the very plain and simple section which is familiar to us in illustrations. Here the transept is only a practical provision for subordinate apartments, and has not yet assumed any architectural importance. With the development of the choir and transepts the crossing became architecturally the dominant point of the design. As Fergusson quite truly remarked, the weak feature in the mediæval plan was that this central space was so small. Its accentuation in section clearly pointed to the employment of a high and towerlike structure, since the width was not sufficient for effect with anything in the shape of a domical covering. The architect of St. Sernin at Toulouse, in the Romanesque period, hit upon the real way to treat it with the class of detail in use at that time; somewhat the same treatment was employed at Chiara-valle; and later the same thing was done, in equally fine style, but with different detail, at Salisbury. The introduction of the octagon crossing plan at Ely was a



The south range of Clare College was commenced in 1640 and finished in 1642. The work, therefore, belongs to the time of Charles I., and is what is called Jacobean. Certain parts of it, however, were altered about 1760, notably the windows, which originally had pointed heads. As a window suitable for collegiate work especially, this is a very useful example, the mouldings being particularly good.

GROUND-FLOOR WINDOW ON SOUTH SIDE OF CLARE COLLEGE, CAMBRIDGE.



manifest improvement in this portion of the plan, and the design of the exterior lantern (though unfortunately not in monumental stonework) just expresses it; in this case a central spire would be out of place and contrary to both plan and structure.

English and French Cathedral Plans.

Though the finest of the French cathedral plans are superior to the long narrow English plan, in their effect of climax, as at Rheims, produced by the widening of the plan towards the east end, there is perhaps a greater variety of interest and suggestiveness in the English cathedral plans. Sometimes, again, we come on a plan which represents a distinct and uncommon idea, quite apart from the general type; as, for instance, at Charroux, with its remarkable choir on a circular plan. A still finer instance is the grand plan of St. Gereon at Cologne, with its elliptical nave and the long choir opening out of it. Hardly any detail could prevent that being a fine interior. Tournai, with its apsidal terminations to the transepts, is another striking instance of special interest and character in the plan.

Domed Churches.

When we come to consider domed churches, we recognise that, in connexion with plan, they fall into two classes—those in which the dome is the main covering of the whole or greater part of the centre of the area, and those in which it is the accentuation of a special open space which forms only a portion of the plan. This sheet of plans of domed churches of the former class affords a remarkable illustration of the manner in which plan forms an element of design. Every one of those plans represents in itself a distinct architectural idea, each suggestive of a different section, and each capable of very varied treatment in detail. San Vitale is a celebrated church of this class, which has, to my thinking, the drawback that no exterior dignity is obtained from the central dome; it is practically an internal architecture only, a defect which it shares with the greater Byzantine church at Constantinople. With all that provision for butressing on the plan of San Vitale, something more might surely have been done with it than merely to build a thin dome as an interior shell, with a low-pitched roof over it. A magnificent example of the central dome plan is the church of the Madonna di Vico in Piedmont, where, as in the case of St. Peter's, the doming over of the central area seems to have frightened two or three architects before it was finally accomplished. I should certainly like to know how Francesco Gallo managed to plant that large lantern on the top of this rather flat dome without coming to grief. It has stood, however, for three centuries.

Michelangelo and St. Peter's.

The plan of St. Peter's as intended by Michelangelo is of some interest, for it shows how much better a composition would have resulted if the building had been let alone instead of being lengthened out by Carlo Maderno. We should then have seen it as a pyramidal composition of which the dome was the main feature, instead of the dome being relegated to a back position in the composition, as seen on approaching the entrance façade. One weakness in Michelangelo's plan, however, is that he has not made as much as he might have done of the apses to the transepts and choir; they are rather timid in line and proportion: we realise this at once on comparing it with Sangallo's plan,

which in this respect is much bolder and finer. Why Michelangelo, who was perfectly acquainted with Sangallo's design, should have chosen this less bold and effective treatment, is perhaps explained by the fact that he was determined, whatever he did, to differ from Sangallo.

A single dome must, of course, be the covering and the accentuation of the most important portion of the plan. Where more than one dome is introduced, it may be laid down that a dome is essentially a form to be employed in a square or transeptal form of plan, and not in a plan in long perspective. At St. Mark's and at St. Front, Périgueux, which probably drew its inspiration from St. Mark's, we see a principal dome at the centre, with subordinate domes grouped around it, each one the roofing of a square compartment; a perfectly suitable application of the feature. At such a church as Angoulême, a long church with a series of domes, the dome is a less suitable feature; the succession of domes interrupts and breaks up the perspective rather than assists it. The vault is the suitable form of roof for the long church, the dome for that which is developed from a square plan. Wren's first design for St. Paul's was, both internally and externally, the single-dome design, a great central space covered by a great dome. Taken as a whole, it is a far finer conception than the existing building, though in detail the model may not be in all respects equal to the latter; at all events, it shows nothing so charming as the present western towers. Externally, St. Paul's is still the single-dome design, but internally it is roofed by a series of smaller domes. I think it is impossible to turn from the original plan to that of the existing church without feeling that we are in presence of a plan very much inferior to the first one; a feeling in which I think Wren would have entirely concurred.

The Houses of Parliament.

The importance of the element of plan is nowhere better exemplified than in the Houses of Parliament. There was a foolish controversy a good while ago as to whether Pugin or Barry ought to have the credit of the building, on the supposition that the Gothic detail was Pugin's. I doubt if the exterior detail was Pugin's, though he no doubt designed a great deal of the interior work. But the controversy was entirely beside the mark: the detail is the weakest part of the building. Its greatness consists in the grand simplicity of the plan, the centre octagon with the main corridors leading right and left to the two chambers, and in the great exterior composition of the two contrasted towers and the central lantern marking the position of the octagon; the detail is a secondary matter altogether. That plan has been copied in buildings of a similar class all over the world. The Budapest Parliament is almost a direct copy of it, with one additional point which our building wants—that the position of the two chambers is shown in the exterior design. Another example of a plan formed on similar lines is Mr. Ernest Flagg's fine competition design for the State House of Minnesota.

St. George's Hall, Liverpool.

St. George's Hall, Liverpool, is a fine example of a great comprehensive plan, the architect's intention in which was not altogether realised in execution. Elmes's idea was that the great central hall was to be a *salle des pas perdus* for the two law courts, which were to be at opposite ends

of the hall, divided off only by curtains, and that there was to be a vast vista, at the opposite ends of which were to be seen the two judges sitting in state. Whether that would have conduced to the convenience or comfort of the courts was a question on which I am afraid Elmes did not trouble himself much: he thought only of great architectural effect, and he was perfectly mad when he learned that his vista was to be closed at one end by a great organ-case. But it certainly was a grand architectural conception, whether convenient or not.

The Great Court of the Louvre.

Among plans for public buildings Bernini's plan for the great court of the Louvre is of some interest, from the effective manner in which he proposed to treat the re-entering angles of the quadrangle, by bringing them out and accentuating them. The inner angles of a great quadrangle are apt to be weak points in the plan, and Bernini's way of treating them is worth attention. To come to an existing example of well-thought-out and practical planning there are few better things to be seen than the planning of the Birmingham Law Courts, by Sir Aston Webb and Mr. Ingress Bell. I believe the actual plan was Mr. Bell's personal work. It answered, I believe, all the requirements of the promoters, and you see how perfectly simple and straightforward and symmetrical it looks; but that kind of simplicity is not attained without much thought and trouble. There should be a centralisation, a backbone as one may say, in the planning of a public building.

Some Old Renaissance Mansions.

Some of the old Renaissance mansions show this peculiarity of a close approach to symmetrical planning, but just missing it; Longleat is an example. Blenheim shows the element of stateliness in planning carried, one might say, to an extreme. The next plan shown consisted, I believe, of wings added at each end of an old mansion, but the recessed portion between the centre and the wings is, on the right hand, the end of a large picture gallery; on the left hand it conceals some small rooms connected with the service. Some people may think that does not matter so long as exterior symmetry is preserved, but it seems to me rather a false method of planning. There is a plan by Mr. E. J. May, additions to Jardine Hall, which I have always admired, and which shows how a very stately effect may be given to an interior of a mansion on not a very large scale. By placing the dining-room and drawing-room at opposite ends of the house, connected by a wide corridor over 100 ft. in length, he has provided for a kind of state procession from the drawing-room to the dining-room, giving the guests the impression of being in a larger mansion than they imagined.

A New Idea.

As a modern example of a plan which is in itself a new architectural idea, I would cite the buildings at Paris called the "Petit Palais" (though it is really a very large building), by M. Girault. This is entirely an original conception in plan; the front block forming a great straight gallery with a dome over the centre, the remaining portion of the plan forming two ranges of galleries are within another, the inner line of the building forming a semi-circular loggia round an interior garden court. This is a piece of real invention in architecture, such as we do not often meet with.

Referring again to the idea that plan is in itself an expression of architectural design, I would suggest that even a block plan may be so regarded. When, some fourteen years ago, the Institute of Architects did me the honour to ask me to read a paper on the question of the sites for the Government Offices, I put my own idea on the subject into a block plan, which received such flattering notice from speakers at the meeting that I may perhaps be excused for feeling a little proud of it. My idea was that the Admiralty (a) was to be completed, as three sides of a quadrangle, the First Lord's house (c) forming a central object on the fourth side of the quadrangle, with a screen colonnade on each side of it. The War Office (b) was to face the Admiralty with a somewhat similar quadrangle, and the Commander-in-Chief's residence, or his Staff Offices, responding to the First Lord's house. An important sculptural war monument would occupy the centre of the roadway between them. All the west side of the street north of the Admiralty was to be set back so as to render it the same width all the way up, and bring the axis of the street to join the centre axis of Trafalgar Square at a point marked by the Charles I. monument, which would only require to be shifted a few yards to come into the scheme. That was what I thought might have been done if the Government could have been persuaded to spend money to do the thing on a grand scale, worthy of the nation. An important point in my mind was that a great national building of this kind should make a *place* for itself, and not merely follow the street lines. The French Government would have realised that; our Government only considers economy of building land, and so the War Office has actually been built in an irregular shape following the street lines, as if it were only a monster hotel which was to make the greatest commercial return out of every yard of ground.

[*The Essential Element in Architecture.*

And now for the moral. We have stretching for a century behind us the battle of the styles, less active and exacting now than it used to be, but still not by any means extinct. Most of us are still troubled with searchings of heart as to which style is the right one for permanent adoption; one of the considerations in working out a design for a new building still is—consciously or unconsciously—"What style shall it be in?" I am proposing to deliver you from all this, once for all, by recommending you to adopt a view of architecture in which detail, in a sense, does not matter. Professor Lethaby some time ago proposed that we should solve the problem by hunting down, as he expressed it, all the accepted detail, and beginning again with no details or mouldings, and see what we arrived at. I think that is rather too stern a gospel for general acceptance, and moreover that we are much more likely to come on interesting and original detail by developing on traditional lines than by evolving detail out of our inner consciousness. What I want to suggest is not, of course, that good detail is of no consequence, but that, provided it is good of its kind, it really does not matter what kind you adopt, so long as the main conception of the building is a fine and effective one; and that the effect of most of the great existing buildings of the world depends on their general conception, and is to a great extent independent of the style of detail. Take, for instance, the plan and section of Palladio's church

of the Redentore. That is a church with a series of deep side chapels, and a dome covering the centre space between three semicircular tribunes. The side chapels are divided by decorative classic columns, but you know well enough that those are not essential but accidental; the essential conception is a series of deep bays at the side of the nave, and a domed centre flanked by semicircular spaces; the columns and the other classic details are not necessary to it; the same general conception might have been carried out with half a dozen different forms, and still have retained its essential character, and remained a fine architectural conception. Or take the Pantheon, one of the finest conceptions in architecture; what has the classic detail, essentially, to do with that? In this case the detail actually spoils the main result; the Order is too small for its position and seems crushed by the superstructure. The plan and section, in other words the same leading idea, might have been carried out with much finer effect with a detail entirely different from this. Or, to refer once more to the great building which is nearly within a stone's throw of us, I put it to you that if, by the wave of an enchanter's wand, you could in a moment transform all its Tudor detail into Renaissance, the Houses of Parliament, in all the qualities which make its real architectural greatness, would still remain what it was, and its claim on our admiration would be in no way affected. In short, the delivery from all this imaginary bondage of styles lies in the recognition of the fact that the essential element in architecture is the embodiment of an idea expressed in plan and section.

OUR PLATE.

The cartoon of a female figure representing "Silence," which we publish as a centre plate in this issue, is clever alike in its general arrangement and in the very skilful drawing of the drapery; and fully merits the silver medal which the artist, Miss Margaret L. Williams, gained in the Royal Academy students' competition last month. A review of the designs exhibited was published in our issue for December 21st.

FEDERATION NEWS.

Sunderland and District.

The annual general meeting of Sunderland and District Building Trades Association was held in the Board Room, 14, Norfolk Street, Sunderland, on December 8th, Mr. J. Morice Wright presiding.

The secretary submitted his thirteenth annual report, which dealt exhaustively with the work of the association during the year. The report was adopted, and the thanks of the association were accorded to the secretary.

The balance sheet, as audited, showed a good balance in hand, and was accepted. Arising out of the balance sheet, Mr. J. W. White drew attention to the fact that many of the members did not insure through the association's agency. He reminded those who insured outside the association's agency of the rule requiring them to forward to the association the equivalent of the commission so lost to the association, and asked that the rule should be complied with, as the commission earned assisted to keep down the annual subscription, and it was unfair that those who insured through the association's agency should have to pay the same rate of subscription as those who did not. He moved to that effect, and the motion was agreed to.

Mr. J. Morice Wright was re-elected president, and Mr. John Emmerson vice-president. Mr. Fred. W. Ranken was re-elected hon. treasurer, and Messrs R. J. Hudson and Joseph Carter were re-elected hon. auditors. The Executive Council was elected as follows:—Messrs. J. M. Wright, John Emmerson, R. J. Huntley, John W. White, W. B. Cooper, J. McMillan, G. Swan, A. Stafford, J. M. Gibbons, T. Scafton, James Taylor, R. J. Hudson, and J. Carter.

The representatives on the Board of the Northern Counties Federation were re-elected as follows:—Messrs. J. M. Wright, J. Emmerson, W. B. Cooper, J. McMillan, A. Stafford, and R. J. Huntley. The employers' representatives on the Conciliation Board were re-elected as follows:—Messrs. J. M. Wright, J. Emmerson, R. J. Huntley, F. W. Ranken, W. B. Cooper, A. Stafford, Geo. Swan, and J. M. Gibbons.

The Bricklayers' and Joiners' Trade Committee was re-elected as follows:—J. M. Wright, J. Emmerson, R. J. Huntley, F. W. Ranken, J. W. White, W. B. Cooper, and Geo. Swan. The Plasterers' Trade Committee was re-elected as follows:—Messrs. J. M. Wright, J. Emmerson, W. B. Cooper, J. W. White, and James Taylor.

Messrs. Clercy and Charlton were elected ordinary members of the Association.

Mr. J. Morice Wright, as chairman of the Dinner Committee, gave a report as to the arrangements made in connection with the association dinner.—W. H. HOPE, Solicitor, Secretary.

York.

The annual general meeting of the York Master Builders' and Contractors' Association was held at the Old George Hotel on December 22nd last, Alderman James Birch presiding over a large attendance.

The Executive's report on the year's work was read by the secretary. The treasurer brought forward his financial statement and balance sheet for the year, which was approved and considered satisfactory, although the year's revenue was diminished owing to a few of the subscriptions being unpaid at the date of the meeting.

The following were unanimously elected to office for 1911:—President, Mr. W. E. Biscumb; vice-president, Councillor Joseph Hardgrave; treasurer, Mr. Charles Dent; secretary, Mr. J. Hague; executive committee, Messrs. J. W. Bellerby, W. Bellerby, T. Beik, Councillor F. W. Birch, W. Birch, J. W. Biscumb, H. Colman, R. Dent, J. Fairweather, Alderman J. Birch, H. Harrison, W. Mansfield, G. Rawling, Councillor G. Sharp, G. Turner, W. Usher, L. Wray, and A. J. Warrillow; Yorkshire Federation representatives, Mr. W. E. Biscumb, Councillor J. Hardgrave, and Mr. C. Dent; National Federation representatives, the President, Vice-president, and Treasurer, with Mr. H. Colman as reserve; Standing Trade Committees: Masons—Messrs. Atkinson and Sons, Messrs. Biscumb and Sons, Parker and Sharp, T. Rawling, A. J. Warrillow, and W. Hall; bricklayers—Messrs. Biscumb and Sons, Dent and Son, Colman and Son, Walker and Son, Wray and Sons, Turner and Sons, Parker and Sharp, I. Belt, W. Birch, John Borwell, W. Mansfield, and T. Rawling; joiners—Messrs. Biscumb and Sons, Dent and Son, Harrison and Co., Hick and Hobson, Colman and Sons, Shepherd and Son, Fairweather and Son, W. Bellerby, G. H. Belt, W. Mansfield, and W. Usher; slaters—Councillor J. Hardgrave, Dodgson and Son, and R. Sherry; plasterers—Messrs. Young and Son, R. and S. Cram, T. Morris, S. Pickering, G. Rawling, and T. Myers; plumbers—Alderman J. Birch, Councillors F. W. Birch and H. Hopkins, Messrs. Braithwaite and Co., Ltd., Padgett and Son, T. Atherley, T. G. Hodgson, J. H. Shouksmith, and R. Calvert; painters—Messrs. Bellerby and Sons, Dodgson and Sons, T. M. Oxtoby, R. Pearson, T. Welburn, and J. G. Pearson; electricians—Messrs. J. Naylor and Sons, and A. W. House; engineers—Messrs. Dove and Sons, G. Dearlove, J. Hardgrave, G. W. Kirk, and W. Thomlinson Walker.

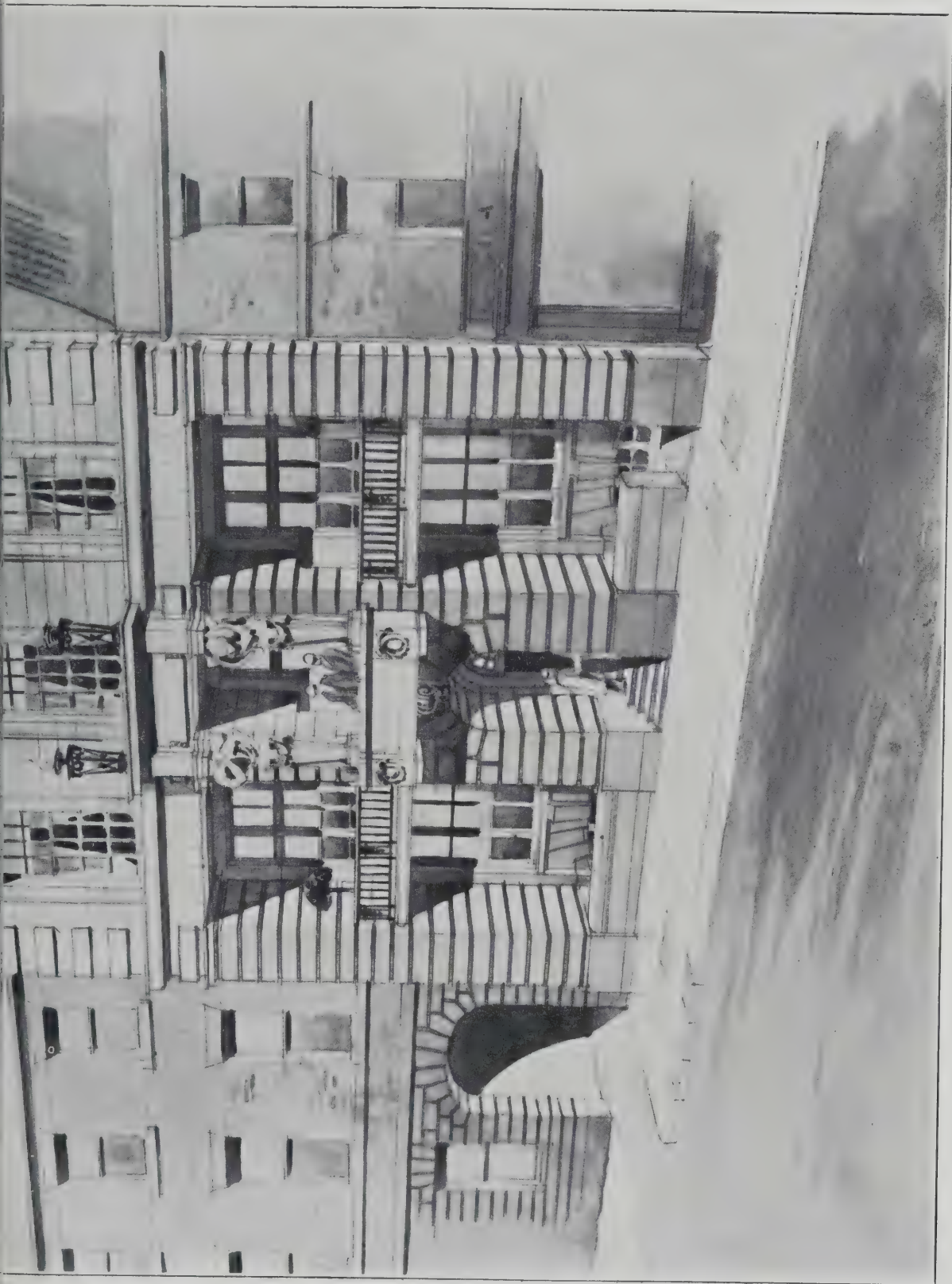
Notice of motion to rescind rule as to increase of 4d. per hour on day's work for skilled workmen was considered. The secretary read the minutes of June 28th and October 5th, after which Councillor W. H. Birch moved that the rule be rescinded. In the course of his remarks he stated it was not the time to make any increase. There was also no guarantee that the charge would be enforced, and any evasion would only cause soreness amongst the loyal members. The suggestion to charge on day's work only would be merely a pretence. The charge to be honest should be placed on contracts not day's work, as practically the whole of the accidents to workmen arose on contracts. Councillor Hopkins seconded the motion, but said he was actuated by different motives from Councillor Birch. He agreed the time was inopportune, and for the reason that owing to intended Government legislation in the near future, particularly the unemployment insurance question, the builder was likely to be still further harassed and taxed in his business. It was advisable therefore to await developments, as it would most likely be the increase of 4d. per hour was insufficient. Mr. W. E. Biscumb supported for similar reasons, but called attention to the fact that the employer paid a premium for compensation purposes on the gross amount of wages paid, whether for day's work or contracts. There was therefore nothing unreasonable in charging the increase to day's work. Mr. C. Dent supported, stating he was entirely adverse to the charge. 4d. per hour was too much, and would be found (if worked out by anyone) to much more than cover the cost of premiums. Alderman J. Birch also supported, on the ground that the whole subject must necessarily be brought up at some future time, when it would probably be found that 4d. per hour was not sufficient. The motion to rescind was eventually carried unanimously.

Messrs. J. W. Knowles and Sons, 23, Stonegate, stained and leaded light workers, were elected members.

It was decided to hold the annual dinner in the New Year.—J. HAGUE, Solicitor, Secretary.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, January 18th, 1911.





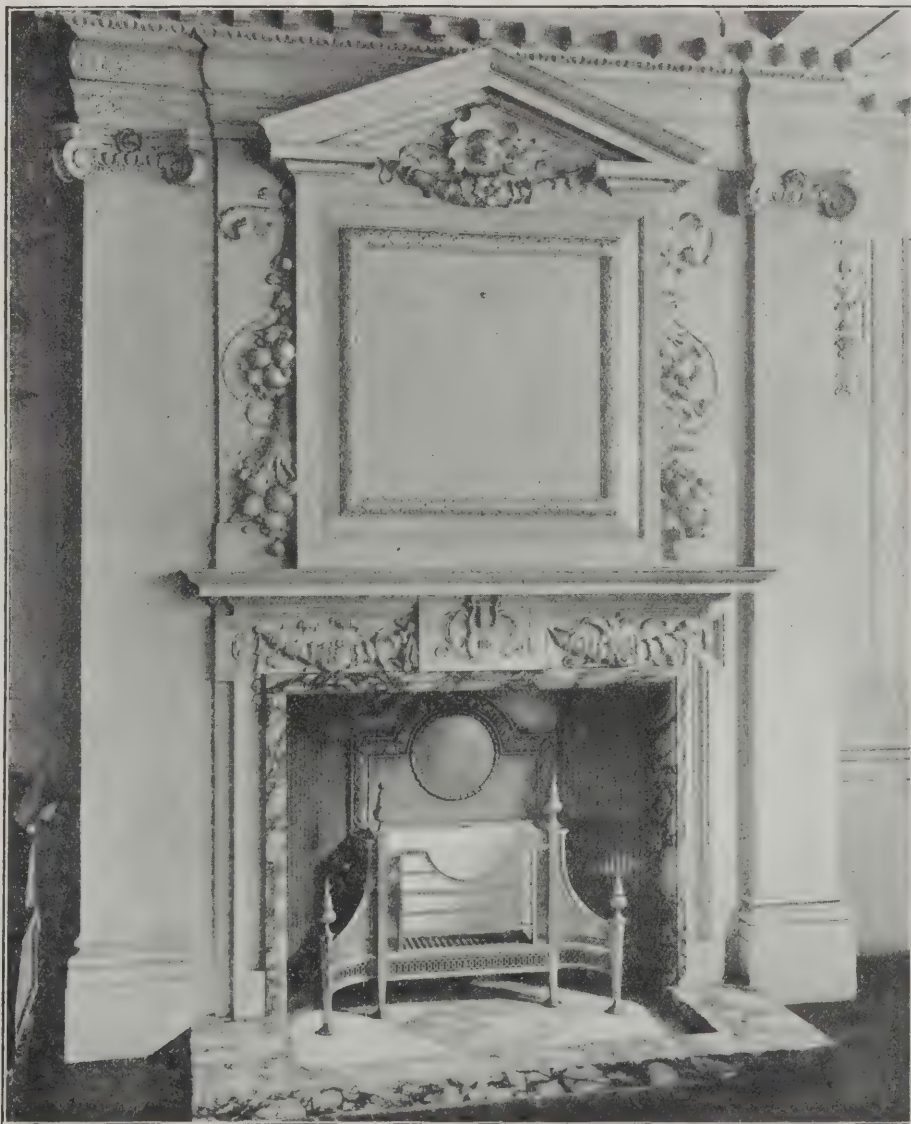
NORTHERN CONSERVATIVE CLUB, PILGRIM STREET, NEWCASTLE-ON-TYNE. CACKETT AND BURNS DICK, F.F.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
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No. 834.



CHIMNEY-PIECE IN BECHSTEIN'S PREMISES, WIGMORE STREET, LONDON, W.
WALTER CAVE, F.R.I.B.A., ARCHITECT.



The Palace of Fontainebleau, near Paris, has suffered much from restoration. A few features, however, remain untouched, and among these]
is the balcony here shown: the beauty of which, both in its general arrangement and its detail, needs no comment.

STONE BALCONY AT FONTAINEBLEAU.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JANUARY 18th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 834.

NOTE: The List of Contents will be found on page V. of the front advertisements.

The Students' Designs at the Institute.



THE two most important of the Competitions for Students at the Institute of Architects, the Soane Medallion and the Tite Prize, have met with an excellent response this year, the Tite Prize especially; and the award of the prizes must have been a matter of considerable difficulty.

The subject for the Soane, "A Gateway and Gatehouse to a Capital City," approached by a bridge over a river with a waterway 120 feet wide, is a subject of more purely artistic character, and less dependent on practical planning, than is usual; there are requirements for a Guard Room and a Bridge-keeper's residence, but these are simple matters easily arranged, and the question of planning, as well as of elevation, comes to be mainly a matter of architectural effectiveness. This, perhaps, made it a popular and attractive subject.

"Civitas," to whom the medal has been awarded, shows a fine monumental bridge of one elliptical arch, and his gateway is a very imposing structure in a modern variety of Classic, effectively treated on the flanks as well as on the front. There is what might be called a kind of Franco-German air about it, as if the author had studied at the Ecole des Beaux-Arts, and subsequently had his taste a little vitiated by German detail; this may be purely imaginary, but that is the impression given. The bad point in it is the crowning feature on the top of the gateway, which is coarse in outline and detail, and does not harmonise with the rest. A serious mistake is the introduction of a colossal statue on the open space in front of the gateway, which would have the effect of dwarfing the scale of the whole concern; but this is not part of the architecture. The parterres round the *place* are too much cut up into little rectangular patches; they should have been treated in a broader manner; and the bronze sculpture groups on the outlying pavilions are far too violent in outline and action. The showing of the perspective view as if in snow, with the snow making white lines on some of the masonry joints, is a little bit of trickery, though it certainly adds to the effect of the drawing. There are, in short, in this design a good many details which are not in the best taste, but the fact remains that it is the boldest and most effective design submitted, and therefore rightly earns the prize. Mere correctness will not save our souls in architecture. There is hanging close to this design a very simple one, signed "Boreas," which is in excellent taste, and presents nothing for criticism, but then there is nothing of interest in it either; it is all too obvious. "Nothing venture, nothing have," is a sound motto in this kind of competition.

An "Honourable Mention" and ten guineas have been awarded to two other designs. "Mauertor" is very clever, but not quite what should be taken to be intended by the programme. The perspective view, a fine and effective drawing, shows a mediæval gate-tower with a great circular turret at each angle, upon which has been superinduced an erection in early French Renaissance style; the author has added on the margin of one of the drawings a short imagi-

nary history of how a Renaissance architect was employed to add something "in the new style" to the mediæval gateway. This sufficiently explains the intent of his scheme, which is very cleverly worked out, and is certainly one of the best things in the room; but it is rather too archæological; we take it that the object of the competition was to produce such a design as might be erected in the present day as a state entry to a city on the bank of a river. His bridge is rather poor. The other design referred to, signed "Sillab," is completely modern, and shows a great deal of architectural ability; in some respects it might be said to be the cleverest design of the set, or at all events the one containing most promise of architectural ability in the future; but it is too much cut up into bits, and wants dignity and predominance in the central feature, as a state entrance to a city; and the cutting up of the entrance roads into three narrow roadways at divergent angles is not a very happy manner of planning. The visible combination of sloping red-tiled roofs with a Renaissance type of architecture we have noticed to be a fashion with students now, and of course there is plenty of precedent for it in Italian work; but in these days of reinforced concrete it looks rather too archæological. Cleverness is the note of this design, but it is a little too clever, and like other too clever designs it fails in dignity and unity of effect.

We may briefly notice a few others of the thirteen designs, taking them in the order of hanging. "Ponta" shows a dignified plan, with quadrant colonnades leading up to the gateway; general effect dignified, but the details rather commonplace. "Journey's End" has a very good bridge, which is the best part of his design; there is a fine perspective view, and the gate-tower makes a rather impressive mass, but the large half-octagon turrets on the flanks have no connection with the central mass, and give the impression of having been built on as an afterthought. Some of the details of ornament are very much open to criticism. In "Anchor" the bridge and pylons are too obvious an imitation of the Alexandre III. bridge at Paris, and in the pylons nothing is gained by fluting the angle columns, which only weakens the erection by detaching them from the general mass of masonry. "Harlequin" is the best of the non-premiated designs, and is very dignified in general effect; the mistake in it is that the pavilions stopping the quadrants at the outer extremity have their design carried down to the water level (specified to be "36 feet below the road"), so that in perspective we get the idea of a quadrant stopped by erections at two different levels. But there is a great deal of merit in this design, and it is a question whether it did not merit an "Honourable Mention" as well as the two others. "Horatius" shows some power and originality of conception and detail; but the bridge, effective in itself, does not seem quite to belong to the rest of the architecture.

The nineteen designs sent in for the Tite Prize fill the whole of the large meeting-room, and we must confess that we should have been sorry to have had the task of deciding which was the best out of all these, many of them showing great ability. The Tite Prize was founded to promote the study of Italian (i.e., Renaissance) architecture, at a time when Gothic was coming in like a flood; now "the wheel has come full circle," and Renaissance is once more the favourite style, without requiring any special stimulus. The

subject for the Tite has generally been one which would illustrate the treatment of Renaissance detail in a somewhat simple structure—a triumphal arch, a garden loggia, etc. This year there seems to have been a desire to stimulate competitors to something more imaginative, by the following programme:—

"A Campo Santo. The site to be on a rocky island rising out of an inland lake, with access to it by boat only. The island is roughly elliptical in shape, the major axis being 1,000 feet and the minor axis 700 feet. It rises sheer from the water for some 30 feet, and then, with a gradual rise of another 150 feet, to the centre or apex of the island. A landing stage and accommodation for boats must be provided. The island is assumed to be covered with ilex trees, which may be cut down as required. The Campo Santo must comprise a chapel having a floor area of about 3,000 feet, with choir, organ, sacristies, etc., in addition. Cloisters of ample width are to be connected with the chapel, providing wall and floor space for monuments and inscriptions. Suitable accommodation to be provided for fifteen gardeners and a resident surveyor."

This is very suggestive, but a large and difficult scheme; the choice of it is justified, however, by the fact that it has attracted an unusually large number of competitors. There are some amusing things among the designs, as might be expected; but there are a good many very meritorious ones. The architecture is specified to be treated "according to the methods of Palladio, Vignola, Wren, or Chambers." We should have thought the name of Bramante might have been added; and in fact the prize design, signed "F. 13," has a good deal of the influence of Bramante in it. This is not one of the most striking sets of drawings at first sight, but after looking through them all we must agree with the award. The design shows a cleared space with crossed walks on it, rising up towards a large domed church, and flanked on each side by an erection of level arcaded terraces or cloisters in three stories, the ground falling away down them on each side. The whole effect would be fine and solemn; the style is the arcaded Italian style, very simply treated in detail. A second place has been given to "Catafalque," who shows a classic colonnaded terrace, with a temple in the centre, the whole making a level line on the upper part of the island, contrasting with the lines of the land and of the stair terraces, by which the temple level is reached. The details are very good, and we notice that the author has shown a modified capital for a pilaster in opposition to the Corinthian capital of the column, just as in Doric architecture the pilaster capital is different from the column capital; this may count to him as an invention, for we do not believe it has been done before.

Honourable mentions have been given to two others. "Ek Thanatou Nikos" has perhaps more of artistic genius about it than any other set—we say "artistic," rather than "architectural," because the laying out of the plan is not the best thing in it, and is wanting in architectural treatment and axiality, though the details are very good. The perspective view, evidently suggested by the work of the German painter Böcklin, is a very fine piece of effect, but it is effect only; it has nothing to do with the representation of Italian architecture, since the architecture is reduced to a mere mass of white forming an element in the pictorial effect. The architectural details are very carefully studied, and the view of the columned atrium to the church has a very solemn effect. The author is certainly a young man of genius, and might have taken a higher place in the competition, or even have won the prize, but for his grotesque fancy of making the plan of his island represent a skull, with rocks for the teeth, etc. That kind of thing is a bad joke, such as we should not be surprised to meet with in the architectural room at the Salon (where one may see any kind of preposterous fancy); but it is not a kind of thing to be encouraged. The other design specially mentioned is "Apex," who has treated the island as a precipitous cliff in the centre (rather in contradiction of the instructions); the architectural details are good. Among the others, "Black Horse" shows some

graceful ideas; "Fiat Justitia" shows an effective plan of a Greek cross church; "Campana" sends a very creditable set of drawings; "Spero Meliora" is a promising student's design; "Nil" shows a fine church plan; and "Catacomb" has ideas in the treatment of his church, as a cemetery church—a great deal of blind wall with pilasters, and small windows high up in the walls; but he has spoiled it by an ill-conceived perspective drawing.

The Grissell Medal has not been awarded, at which no one will be surprised who examines the drawings, which show no grasp of construction at all; one of them seems based on a belief that a sound timber construction depends not on the method of framing timbers, but on the number of pieces that can be introduced.

The Owen Jones prize goes to a very fine set of coloured drawings, including the ceiling of the Torrijos Palace at Madrid; stained glass from the Ste. Chapelle; and the decorations of a room in the Castle Angelo. The set of drawings for which the Pugin Scholarship has been awarded includes a great deal of good drawing from English church architecture, especially a large measured drawing of the tower of St. Mary's, Stamford, which takes us back to the old days when such drawings were the ambition of every serious architectural student, and when they had a practical value, since the object was to build modern churches like unto these. Now we are more and more giving up that, and the question arises, How much longer will the Pugin student-ship survive? It promotes, however, the study of a beautiful class of English buildings, which might otherwise be neglected. The "Measured Drawings" prize also goes for drawings of a church, Edington (a rather poor example of late Gothic) by "Ethandun"; there is an excellent set of St. Laurence Jewry, by "Nil Sine Labore"; and "Oxonian" contributes drawings of Palladio's Basilica.

The real interest of the students' competitions lies, however, in the Soane and Tite designs, which represent architectural invention; and those of this year are fully up to, if not rather beyond, the average standard.

The awards are as follows:—*Soane Medallion*, "Civitas," Mr. P. Mawson, London, W.; hon. mention and ten guineas, "Mauerthor" (Mr. C. Percival Walgate, Kensington, W.), and "Sllab" (Mr. G. Douglas Robinson, London, N.). *Tite Prize*, "F. 13" (Mr. George Herbert Foggett, Kensington); second place, "Catafalque" (Mr. Henry Boddington, junr., Stockport, near Manchester); hon. mention, "Ek Thanatou Nikos" (Mr. W. G. Newton, London, W.), and "Apex" (Mr. V. O. Rees, London, N.W.). *Owen Jones Prize*, Mr. A. W. Bellis. *Pugin Studentship*, Mr. B. F. Cowper. *Measured Drawings Medal*, Mr. T. F. W. Grant. *Ashpitel Prize*, J. B. F. Cooper, Manchester. *Arthur Cates Prize*, A. G. Henderson.

The Mall Improvement.

THE important operation of completing the opening of the Mall into Charing Cross seems to have been delayed by a dispute as to who shall pay for it. The Office of Works maintain that the responsibility of the Government ends with the erection of the building by Sir Aston Webb, which forms the state entry to the Mall, and that the connection of this with the street at Charing Cross is a municipal improvement which is outside of their province. The London County Council and the Westminster Borough Council, on the other hand, maintain that the improvement is desirable in order to open up the Government buildings, and to provide a fitting approach to the Queen Victoria Memorial, and is therefore to some extent a National work; and on this ground they offer each to contribute one-third of the cost of demolishing the houses, and rendering the opening of the required width, if the Office of Works will contribute one-third. This appears to us to be a perfectly reasonable proposal under the circumstances, though apparently the Government has not, so far, acceded to it, as the conference between the representatives of the three

authorities concerned is reported as having come to no decision. With the Coronation ceremony and procession imminent, the delay in the matter is singularly unfortunate. It is to be hoped an agreement will be come to in time to allow of the Coronation procession adopting what is in every respect the most suitable route.

An Architectural Scholarship for South Africa.

THE course which architecture, carried out by English architects, should take in our Colonies, having regard to differences of climate and mode of living, is a question of great interest. In India we commenced with the simple assumption that what we were accustomed to practise in England it would be natural and suitable to practise in a conquered tropical country, and accordingly we built Renaissance public buildings, and (at Calcutta) a Gothic revival cathedral; and this spirit in Anglo-Indian architecture was carried on for a long time. Mr. Chisholm, however, attempted with success to combine European planning with a style founded on Hindu architecture, and Mr. Ransome has since pursued somewhat the same path, in a rather different style, in buildings which seem to represent English architectural taste coloured by Oriental conditions.

In connection with this subject, it is gratifying to find that an able English architect, Mr. Herbert Baker, who has made an exceptional position for himself in South Africa, has instituted a biennial scholarship to assist South African architects in the study of Greek and Roman architecture from their existing monuments. At first sight this does not seem to have any special connection with South African requirements; but Mr. Baker's statement of his case is perfectly logical. It stands thus: It is desirable that architects intending to practise in South Africa should be encouraged in the study of the best models in architecture, for the formation of their taste (and illustrations which we have seen of modern South African architecture show that there is great need of this), but it is also desirable that this study should be founded on the architectural monuments of southern Europe, which were developed in a warm climate and under a bright sun, and not on northern styles which were developed under quite different climatic conditions. This is sound common sense. And it is not contemplated by any means that the object of this study should be to reproduce Greek or Roman architecture on South African soil. The object is to train the mind of the student by the study of great examples of monumental architecture. This is admirably put in Mr. Baker's own words:—

"The successful candidate will be required to spend eight or nine months at Rome as headquarters, acting under the direction of the British School at Rome. This period will include a visit to Athens, with the British School there as headquarters. He must apply himself to the study of architecture and its allied arts, and not to archæology. He should devote his studies to the principles upon which the noblest architecture of all periods is based rather than to the superficial details, which are often the mere accidents of style. For the rest of the year he must make London his headquarters. He will then be required to continue his work in museums and libraries, and to study the architecture of Northern as compared with that of Southern Europe. At the completion of his year he must exhibit, under the direction of the R.I.B.A., the result of his studies, and submit a thesis on the relation of style in architecture to conditions of climate and practical requirements. He will then be required, within a limit of time fixed by the trustees, to hold one or more similar exhibitions in South Africa."

These conditions, it will be seen, provide explicitly for the consideration of the relation of the architectural studies to their practical application as an influence on modern architecture. The holders of the exhibition are to study the ancient monuments not as archæology, but as architectural suggestion.

The scholarship is to be of the value of £250, tenable for one year. Trustees in South Africa have been appointed, and in Europe the scholarship will be administered by the

Royal Institute of British Architects, working in conjunction with the British Schools at Rome and Athens. The scholarship will be open to any British subject who has spent seven years in the study and practice of architecture, and who has spent at least two-thirds of his architectural career in South Africa. It will be convenient to quote here the statement of the requirements which will be made from candidates:—

"Each candidate will be required to submit a portfolio of designs, drawings, or work of craftsmanship allied to architecture, all of which must be the product of his own hand and brain. He must also make a design, and write a short essay on given subjects. There may also be a *viva voce* examination, and an inquiry as to the candidate's character and general attainments. The selection will be made by the trustees, acting on the expert advice of an architect appointed by the council of the Transvaal Association of Architects, an expert (not necessarily an architect) appointed by the trustees, and myself or my nominee."

Further information as to dates, subjects of examination, and other details, will be given on enquiry, addressed to Mr. Baker, at P.O. Box 4,959, Johannesburg.

Mr. Herbert Baker, who gained the Ashpitel Scholarship at the Institute of Architects in 1889, was well known in London as one of the cleverest of the younger members of the profession, before his departure for the Colony. He was elected an Associate Member of the Institute in 1890, and a Fellow in 1900. In establishing this Scholarship he has done a good work, which will probably have important results on the future of South African architecture.

Lump Sum Settlements of Workmen's Compensation Cases.

AT the Lambeth County Court recently an application was made under the Workmen's Compensation Act to sanction the payment of a lump sum of money as compensation to a workman under an agreement to pay in discharge of the employers' liability. His Honour Judge Emden said that he did not approve of the payment of these lump sums. He believed that the larger portion of the work under the Workmen's Compensation Act was being transacted under agreements of that character, and the object of the Act was being defeated. If the case before him was an improper case to bring, it was not a case for an agreement at all, and ought to be dismissed. If it was a proper case, an agreement was not the right way to dispose of it, and he did not think the workman would be properly protected unless the matter came before the Court. He had been watching these cases for some time, and his conclusion, based upon investigation, was that the whole beneficial effect of the Act was being defeated. That kind of thing encouraged improper applications, and he must do all he could to stop them. The application was refused.

Extensive Housing Scheme for South London.

UNDER the instructions of the Bank of England and of the trustees of the will of the late Mr. Robert Jackson Bates, Messrs. Field, Sons and Glasier, of London Bridge and Waterloo Place, have effected a sale to the trustees of a fund for the housing of the working classes of the extensive island site in Rodney Road, Walworth, which occupies a ground area of over 61,000ft., and has frontages of over 1,000ft. to Rodney Road, and the contiguous streets. From information supplied by the secretary of the Fund, we understand that, according to the present intentions of the governors, it is proposed to develop the site by the erection of nine blocks of artisans' dwellings, containing each twenty tenements, and affording accommodation for more than 600 persons. As the property is no great distance from the large Tabard Street area which the London County Council are about to clear, it is believed that these new dwellings, when erected, will assist in solving the re-housing problem which will be presented by the Council's demolition scheme.

NORTHERN CONSERVATIVE
CLUB, NEWCASTLE-ON-TYNE.

This building, in Pilgrim Street, New-
castle-on-Tyne, is now being completed.
The architects are Messrs. Cackett and
Burns Dick, F.F.R.I.B.A. The details of
the scheme have been worked out in con-
sultation with Sir Walter Plummer and
Messrs. J. R. Hedley and T. E. Ruddock,
chairman and vice-president of the club.

The ground floor comprises a good en-
trance hall, reception room, and large
smoke room, with ample cloak and lava-
tory accommodation, the staircase and
passenger lift being about midway be-
tween the front and rear apartments;
while on the first floor, which may be con-
sidered the principal floor, are reading
and private dining rooms, and the most
important room in the building—the din-
ing hall, about 64 ft. long by 27 ft. wide,
and lofty enough to provide a mezzanine
floor with balcony overlooking the room.
The approach to this room is shown by
the accompanying view.

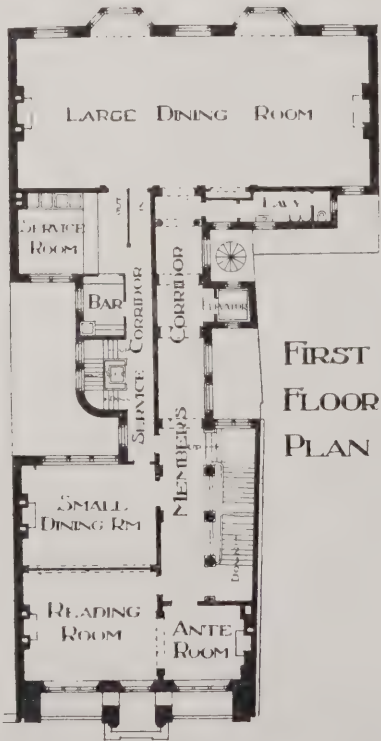
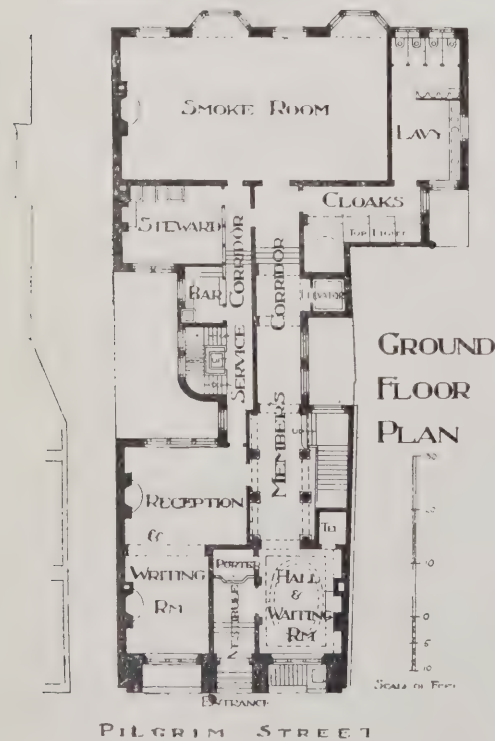
The second floor consists of two billiard
rooms (three tables), card rooms, etc., and
on the third and fourth floors are ten bed-
rooms for members, with bathroom ac-
commodation, servants' bedrooms, etc.

The lower ground or basement floor is
efficiently equipped with cooking and
heating appliances, and has administra-
tive and staff apartments very complete in
arrangement. A special feature of the
planning is the way in which the service
arrangements on the principal floors are
contrived to avoid contact with the mem-
bers' corridors, whilst affording the most
speedy and effective service to the club
rooms.

The building is substantially con-
structed, fire-resisting throughout, and



View of staircase on first floor and corridor leading to dining-room.



NORTHERN CONSERVATIVE CLUB, NEWCASTLE-ON-TYNE CACKETT AND BURNS
DICK, F.F.R.I.B.A. ARCHITECTS

finished in a quiet, club-like manner
in appropriate material such as is
found in the solid dignified work
of the designers of the Georgian period.
A somewhat unusual feature externally
is the treatment of the two lower
storeys, which are recessed, as the
result of practical necessities. In thus ful-
filling a requisite purpose, interest is lent
to the elevation, and a useful and appro-
priate balcony opening out of the first-
floor rooms is made possible. The fine
open position of the site, with Hood Street
opposite disclosing a view of the façade
from Grey Street, fortunately makes pos-
sible a proper estimate of the design—a
possibility too seldom the case in ordinary
town streets.

The general contractors are Messrs.
Stephen Easton, Ltd., of Newcastle. The
marble work is by Messrs. Emley and
Sons, of Newcastle; the heating, plumb-
ing and electric lighting by Mr. R. W.
Cairns, of Newcastle; the sculpture work
and balcony railing on the front elevation
by the Bromsgrove Guild, of Bromsgrove;
the iron balustrading to the main staircase
by Messrs. Spital and Clark, of Birming-
ham; the painting, decoration and glass
by Mr. G. Laidler, of Newcastle.

MAGAZINES AND REVIEWS.

The "Art Journal" contains an article on "Tewkesbury," by Mr. R. E. D. Sketchly, not so much on the famous Abbey Church (though a large illustration of a part of the interior is given) as of the general picturesque elements in the town—the bridge and the streets and houses. Most of the illustrations are by Mr. Cameron, and are very effective; but any article on Tewkesbury ought certainly to have included an illustration of the finest thing to be seen there, the great many-ordered Norman arch of the west front. An article on "The Wertheimer Sargents" affords the information that the splendid picture, "A Vele Gonfie" ("In full sail"), exhibited some years ago at the Academy, and one of the finest things Mr. Sargent ever painted, is also a Wertheimer portrait. There are no less than twelve portraits of members of the Wertheimer family, all in Mr. Sargent's best style; and certainly modern art owes something to a family who gave this great painter so many opportunities. In some remarks at the close of the article, on the characteristics of Mr. Sargent's art, we entirely concur. We cannot concur in the praises bestowed by Mr. Baldry, in another article, on the new spandrel paintings in the great hall of Bridgewater House, which we had an opportunity of seeing not long ago.

The "Burlington Magazine" returns to the charge in regard to the proposed national memorial to King Edward VII., with renewed contemptuous references to the Albert Memorial as a thing "that fills us with shame and disgust." This kind of language about a memorial which includes such sculpture as Foley's "Asia" group, and Armstead's two sides of the bas-reliefs, and which as a whole is a fine and novel architectural conception, is absurd exaggeration, and only calculated to lower our estimate of the judgment of the critic who makes use of it. What the "Burlington" critic wants, we presume, is that the competition should be presided over, and the selection made by a clique of the ultra-modern faddists in art. It is to be hoped that no such result will come about. National memorials should represent what is sane and central in artistic ideals, not the eccentricities of the moment, such as those of the Grafton Gallery exhibition, which find an apologist and defender in another article in the same issue. Some illustrations of "Oxyokes in the North of Portugal," accompanying an article on the subject, are very interesting as examples of popular decorative craft.

In the "Nineteenth Century," that accomplished sculptor Mr. Reynolds-Stephens writes on "A Plea for the Nationalisation of our Sculpture." What the writer appears to want, in the first place, is national patronage for English sculpture, in which he is entirely right; there is, in fact, no such thing, and one reason why French sculpture is (at present) superior to that of any other country is that the Government give such ample encouragement and opportunity to the sculptors. When Mr. Reynolds-Stephens urges that our sculpture should be national in another sense—should endeavour to shake off foreign influences and be a school in itself, and should deal with national subjects, we are not so sure. National subjects would no doubt be those which Government patronage, if we had it, would mostly demand; but the public would be interested in a subject that was interesting in itself, independent of

nationality. It must be remembered that sculpture is in any case a very difficult art to understand, much more so than painting; it is more symbolical and less realistic. And then, a the writer says, the English public is not accustomed to the nude, which must always be the highest effort of sculpture; he thinks they are not so much prudish as ignorant; they do not understand why a statue should be nude when real life is not. On the other hand, we entirely agree with him that there is no value in mere life studies that contain no poetic suggestion. Our impression is that the comparative weakness of English sculpture results from three causes—(1) that already mentioned, the want of State patronage and encouragement; (2) the inadequate manner in which it is represented at the Royal Academy, where it is crowded into a small space and cannot be fairly seen; and (3) in a certain prosaic element in the English character which affects public and sculptors alike. In a French exhibition we constantly find poetic conceptions symbolised in sculpture; in an English exhibition this is far more rare; or if the attempt is made, there is a want of intensity about it. The sensation made by Carpeaux' "La Danse" when it was exhibited at the Academy arose not so much from its power of technique as from the intense and wild energy with which the subject was treated; a kind of intensity which seems foreign to the English nature, and which, in fact, in that instance, almost startled the English spectator. That is an innate deficiency which it is difficult to escape from. But English sculpture will never have a fair field until the State does for sculpture here what the neighbouring State does across the Channel.

In the same issue is an article by Captain Swinton on "A King Edward Bridge," which is the proposal, that has already been put forward and even illustrated, for a great new roadway bridge across the Thames, to take the place of Charing Cross bridge, the station being transferred to the south side of the river. The author thinks that one result of such a bridge would be the development of a great quarter of fine buildings on the south side of the Thames; he asks, "Why are all our great buildings on one side of the river only?" Well, it is partly a kind of tradition from the fact that the land on the south of the river was formerly a water-logged, marshy district, not favourable to great buildings. A beginning has now been made with the new County Hall, and probably further architectural development on that side would follow. We agree that the proposed new bridge would be a great influence in favour of such a result. The article is worth attention.

The "Antiquary" contains an article on "A late Celtic Cemetery at Welwyn, Herts," with a map, and "Notes on the Older Eastbourne," by Mr. J. C. Wright. Many people who go to the very modern Eastbourne as a holiday place have little idea how much historic interest there is in the neighbourhood in connection with Old Eastbourne. It is to be hoped some of them will benefit by Mr. Wright's article, though we fear few holiday-makers pay much attention to the older history of the watering-places they visit.

The "Architectural Record" (New York) contains an article on what is called "the new architecture," which means, apparently, the high commercial building designed with no other purpose than to get the greatest floor space and the greatest return for the outlay. The writer maintains that this is the only

"commercial architecture" which is truly such; that no other country possesses a commercial architectural style properly so called. We think there is such a style in England, only we call it mill-building, and not architecture. At all events, to distinguish such erections, as constituting "the new architecture" is using rather big language for a very commonplace style of edifice. The description of the construction of these buildings is of some practical interest, but the illustrations of them form a dull spectacle.

The "Cornhill" contains an article by Mrs. Barnett, "Of Town Planning," the scope of which, however, is rather social than architectural. The only point in it which is new, and which bears upon amenities of effect in town planning, is the suggestion that solid walls are unnecessary as boundaries to gardens, and keep out sun from the gardens, besides preventing the gardens from being a source of pleasure to those outside the barrier. There is a good deal of truth in that.

MANCHESTER SOCIETY OF
ARCHITECTS.

MR. ALBERT H. HODGE ON
ARCHITECTURAL SCULPTURE.

At a meeting of the Manchester Society of Architects on Wednesday last, January 11th, Mr. Albert H. Hodge read a paper on "Architectural Sculpture" before a large attendance of members.

It was a great mistake, Mr. Hodge said, to think of architectural sculpture as a form of decoration applied only to buildings, and as secondary to the bust and portrait statue. Each has its place in the world of utilitarian art, must be subservient to the principles of architecture, and must have truthful construction, balance, scale of parts. Sculpture, when part of an architectural motive, should be so closely allied to its setting, that to strip one piece of it is to rob the composition of a necessary "factor of scale." How were we to bring about this oneness of mind and motive? When he studied the problem, he felt that the greatest quality of a piece of sculpture was scale. It was better to err on the small side when fixing the size of figures, than to make them too large. In the former case the figure only suffers, whereas in the latter the whole building is dwarfed.

The placing of sculpture on our buildings ought to be considered when the façade is conceived in the mind, and should not have the appearance of being added. The Parthenon pediment was not an after-thought, nor were the friezes an extra. To obtain a monumental feeling, we should have to look up slightly to the sculpture. When used low down, it should be severe or Egyptian in character.

Mr. Hodge analysed the sculptures of the Parthenon pediment, and showed how the expression was graduated from Helios rising from the sea at one side of the pediment to the birth of Minerva in the centre, the action of the figures increasing as the central group was approached, and decreasing towards the quiet Selene on the other side. He instanced many other Greek sculptures designed on architectural principles, a portion of the Panathenaic frieze being planned with the wave ornament as its motive, and another part with square outlines on the basis of the fret ornament. The whole motive becomes slower and steadier as it approaches the main entrance, where

the assembled gods are seated. We ought to realise the limitations of sculpture and architecture, and not make our sculpture represent life models. It should look as if it were cut out of stone, not built up of small pieces. Egyptian work owes its austerity to this quality. Modern French work looks as if it were clay modelling. Straightness of drawing and truthness of surface are always found in the work of a master; rough lumps of stone left to make the adjoining parts look refined are tricks unworthy of sculpture. Style in our work is simply the outcome of true form.

He wished to point out the great loss to architecture by an estrangement from sculpture. He appealed to architects to draw closer the bond. Architecture realised its highest flights when it used sculpture in the proper way. Without sculpture it might be fine, with sculpture it is supreme.

J.T.H.

BRISTOL SOCIETY OF ARCHITECTS.

A meeting of this Society, open to members and their friends, including ladies, was held on January 9th; the president, Mr. Foster Wood, in the chair.

A lecture was given by a member and former honorary secretary of the society, Mr. F. Bligh Bond, F.R.I.B.A., Diocesan Surveyor of Bath and Wells, whose subject was "Somerset Churches," and a very fine collection of about a hundred lantern views was shown.

The lecturer was of opinion that the Perpendicular style and its transition from the Geometrical was developed in these churches at a very early date. Somerset, indeed, may be regarded as the home of this phase, and it was probably carried thence by ecclesiastics to the Midlands, East Anglia, and other parts of the country. Another beautiful feature of the Somerset churches is that of the characteristic square towers built as a result of the wonderful perfection in campanology attained during the fifteenth century. Many interiors were illustrated and described specially with reference to the Celtic and Saxon types of planning, as they affect the screening of the chancel and width of its arch.

Examples were shown of Jacobean and Carolean screens, which, as at Croscombe, include praiseworthy attempts to replace, in measure, the work destroyed by the decree of Queen Elizabeth, who ordered all rood lofts to be taken down. Even some of the early Hanoverian work may be considered fairly harmless, but anything later than the first George was usually incongruous and debased.

On the motion of Mr. G. C. Lawrence, a very hearty vote of thanks was accorded to Mr. Bond for his lecture.

FIRE PROTECTION FOR WOODEN STRUCTURES.

Fire protection for wooden bridges in Canada is required and regulated by the Canadian board of railway commissioners. An order concerning the work has been issued, applying to all trestles the whole of which cannot be seen from an approaching train for a distance of at least 1,000ft. During the months of May to October, inclusive, one of the following methods of protection must be enforced: Keeping watchmen at the structures; the track-

patrolling system; fire-alarm signals; ballast flooring; zinc covering of caps, stringers, and batter posts, and the use of fireproof paint, equal in efficiency to a certain standard and applied at least once every five years. In addition water barrels must be kept at one end of trestles of less than 30ft. in length, at both ends of trestles longer than 30ft., with intermediate barrels at intervals of not more than 150ft., except in the case of pile trestles over streams or other bodies of water. These barrels are to be kept filled with water, within 10 inches of the top. The water barrels must be maintained in good repair, pails must be provided, and where watchmen or track-walkers are employed, pails must be carried by them during their inspections.

Where protection is provided by watchmen or by trackwalkers, all trestles on the main line must be inspected at least twice every 24 hours, and on branch lines once every 24 hours. Brush and dead grass must not be allowed to accumulate around trestles. Railway companies failing to comply with these regulations will be subject to a fine of \$30 for each offence, and watchmen or track-walkers who fail to make inspection in accordance with the regulations are liable to a fine of \$15 for each offence. Where ballast flooring is the means of protection the ties must be completely covered with gravel level with the underside of the rail head. It is required that the fire-alarm signals must be equal in efficiency to the Montauk thermostat.

COMPETITIONS.

York Road Schools, Battersea.

In the recent competition held for the above, the designs submitted by Messrs. George Baines and Son, of 6, Clement's Inn, Strand, London, W.C., have been placed first, and the work is to be proceeded with at once.

Elementary Schools, Edgeley, Stockport.

The assessor, Mr. J. W. Simpson, F.R.I.B.A., has made the following awards in the limited competition for the above schools:—(1) Messrs. Reginald H. Spalding and Ernest G. Theakston, of London; (2) Messrs. Cheers and Smith, of Blackburn (£40); (3) Messrs. Crouch, Butler, and Savage, of Birmingham (£20).

LIST OF COMPETITIONS OPEN.

JAN. 21. SCHOOL FOR TAUNTON.—The Education Committee of the Borough of Taunton invite architects practising in that borough to submit designs for a provided school for 440 children. No premium is offered, but the author of the selected design may carry out the work at the commission of 5 per cent. Address George H. Kite, Town Clerk, Municipal Buildings, Taunton.

JAN. 30. BRISTOL. HOUSING AND COTTAGE EXHIBITION.—Particulars with respect to the competitions open to architects and builders may be obtained, not later than January 30, from Frank H. Bromhead, A.R.I.B.A., Leaze Cottage, Shirehampton, Bristol, hon. sec. The exhibition is to be held from September 4 to October 7, 1911.

JAN. 31. GLASGOW PUBLIC LIBRARY.—The Corporation invite from architects competitive plans of a branch library proposed to be erected at the corner of Saracen Street and Allander Street, Possil-

park. Premiums of £50, £30, and £25 respectively will be awarded to the authors of the designs adjudicated first, second, and third in order of merit. Designs must be lodged on or before Tuesday, January 31. Particulars from A. W. Myles, Town Clerk, City Chambers, Glasgow.

FEB. 1. DUBLIN. NEW PAVILION, ROYAL HOSPITAL FOR INCURABLES AT DONNYBROOK.—Particulars in our issue for October 12.

FEB. 1. SUITE OF OFFICES, HULL.—The Guardians of the Poor for Sculcoates Union offer premiums of ten guineas, six guineas, and four guineas for designs for a suite of offices to be built in Margaret Street, Hull. Apply to J. H. Wild, solicitor, Clerk to the Guardians, 12, Harley Street, Hull.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Premiums of £15 and £10 are offered. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee E. Pearson, Corbridge.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 26.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125, for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 8-12. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

NO DATE. CARNEGIE LIBRARY, PENISTONE. Particulars from Clerk to District Council, Penistone.

NO DATE. UNIVERSITY COLLEGE FOR SOUTHAMPTON.—It is expected that Mr. Henry T. Hare, F.R.I.B.A., will be the assessor. Further particulars are to be announced.

In publishing the drawing of Holy Trinity Church, Kingsway, in our issue for January 4th, we ascribed the design to Mr. Belcher only: whereas it should properly have been put over the joint names of "John Belcher, R.A., and J. J. Joass, architects."

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editors desire to give notice that answers to the following enquiries can no longer be undertaken:—

- (1) Enquiries about buildings to measure in particular towns and districts.
- (2) Enquiries embodying questions which have been set in examination papers.
- (3) Enquiries which ask for or require the preparation of special designs as part of the answer.

"Repetition" Work Based on Bills of Quantities.

"CONSTANT READER" writes: "A quantity surveyor is instructed to prepare bills of quantities for a cottage to cost £500, at the rate of 2½ per cent. on the estimated cost. The bills are prepared and delivered to the architect, who in turn forwards a cheque for £12 10s. to the surveyor. The latter now finds that the architect used the bills of quantities as a basis to obtain the price of four cottages; and as the contract amounts to £2,000, the architect will receive £50 for preparing quantities. What is the legal position of the surveyor? Is he entitled to claim the difference between £12 10s. and £50?"

—I do not think that the quantity surveyor will be well advised in pursuing this matter any further, as, to say the least, it is very doubtful whether he can recover

his fees under the circumstances detailed. I have not been able to find any decided case touching upon this question of "repetition work" in reference to the fees of a quantity surveyor. F.S.I.

Church of St. Oswald, Ashbourne, Derbyshire.

S. P. B. (SIDMOUTH) writes: "In what book can be obtained particulars concerning the Church of St. Oswald, Ashbourne, Derbyshire, and also Archbishop Walter Grey's Tomb in York Minster?"

—A very fine and complete set of measured drawings of Ashbourne Church, Derbyshire, by Mr. L. M. Gotch, gained the R.I.B.A. silver medal in 1905, and was published in the Architectural Association Sketch Book in that year. Methuen's "Little Guide to Derbyshire" is the readiest source of information as to its history. Archbishop Grey's tomb in York Minster is illustrated by measured drawings in the Architectural Association Sketch Book for 1885, and also by a set in the Building News, 18, viii., 1876. A good description is in the guide to York in Bell's Cathedral Series. G.

Contract Money Withheld Through Leaky Roof.

"ANXIOUS" writes: "The roof of a house erected a year ago has, with heavy rains, admitted a little water. The proprietor has kept back the sum of £10 contract and £5 extras money because of this, whereas the agreement was that all

money should be paid within a month of completion, the builder to give a three months' guarantee. Am I justified in demanding my money? I have endeavoured to remedy the defect."

—Your letter appears to show that the roof has not been perfectly weather-proof since it was constructed, and that the remedies you have tried have not been perfectly successful; therefore, as the builder, you remain responsible for defective workmanship, so that probably you would not succeed in obtaining your money if you demanded it until you can show that the roof is weather-proof for a reasonable period. Your best plan is to agree with the employer to have the roof examined by an independent expert, whose directions for further remedies, if any are required, you agree to carry out, and upon whose certificate that the work is sound, the employer agrees to pay. Such agreement should be in writing, and provision made as to who is to pay the expert's fees. A. G. W.

Prospects for Architectural Draughtsmen in Canada.

J. R. writes:—"Kindly give information with respect to the prospects of an architectural draughtsman in Canada."

—Our correspondent would do well to communicate with the Emigrants' Information Office, 31, Broadway, Westminster, where information concerning the prospects for architectural draughtsmen in Canada would probably be available. As a further precautionary measure, it would be advisable to advertise in the chief Canadian papers in order, if possible, to obtain some definite appointment before leaving this country. The papers we suggest are: "The Canadian Architect and Builder," and "The Globe," both published in Toronto.

Rendering Account for Variations.

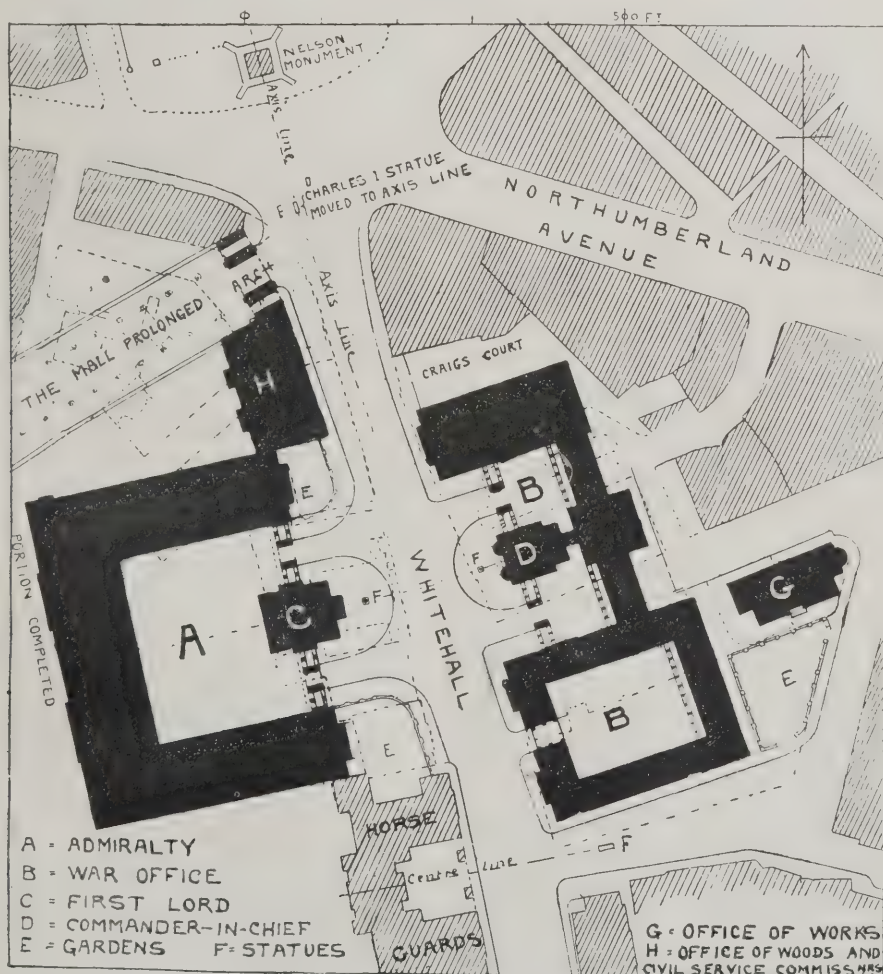
QUANTITY SURVEYOR writes: "Is there any legal machinery whereby a contractor can be forced to render his account of variations within a reasonable period from the completion of the work? My client is a business man, and naturally wants to know the extent of his indebtedness. The contractor, however, is so full up with work that he has not had time to get his account out. This is some time ago now, What do you recommend?"

—I fear that there is no particular legal machinery specially adapted for this purpose, but the architect's powers under the contract should be sufficiently clear to enable him to measure up himself if necessary. I advise that the architect should call upon the builder to furnish his account under the contract by a specified date, in default of which he will (1) measure up himself, and (2) issue his final certificate. Whatever procedure is adopted, it must be reasonable—the law always construes every contract by the aid of that word "reasonable." F. S. I.

Decreasing Width of Walls Above First Floor.

"SMETHURST" (Buslington) writes: "Would it be safe to build a milk factory, 50ft. by 20ft. by 25ft. high, in 14in. brickwork up to the first floor (14ft.), and then continue 14in. by 24in. piers, 10ft. apart, to carry 16in. concrete floor beams, filling in between piers with 9in. brickwork?"

—Further particulars (and especially a cross-section) would have been useful in answering this question. Though it is stated that the building is 25ft. high, and that the height to first floor is 14ft., the piers above that level are said to carry 16in. concrete floor-beams, so that pre-



This is the block plan which was referred to and described in Mr. Statham's paper read before the Architectural Association, and printed in our last issue. As a plan which excited some attention at the time, it may be of interest to our readers. The description of it will be found on page 52 of our last issue.

(Reproduced from the R.I.B.A., Journal of April 15th, 1897.)

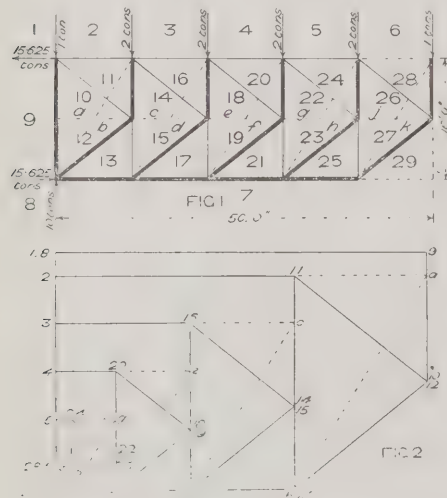
SUGGESTED PLAN FOR THE WAR OFFICE AND ADMIRALTY, BY H. H. STATHAM, F.R.I.B.A.

sumably there are three storeys, the top-most one in the roof, unless a flat roof treated as a floor is meant. Taking a floor load of $2\frac{1}{2}$ cwt. per foot super, and a safe load on brickwork in piers (stocks in lime mortar) of 4 tons per foot super, this latter figure is seen to be exceeded, the actual load working out at $5\frac{1}{2}$ tons per foot super from one floor alone, exclusive of the additional weight of roof (if any). The first floor construction presumably is of joists spanning from wall to wall without main beams, and for this distributed load alone (without the load transmitted from above) the 14in. wall should prove ample. An increase in the size of the piers above the first floor to 2ft. 3in. by 1ft. 6in., and their continuation below of similar size, should make the construction safe, provided no roof thrust has to be dealt with. G.

Diagram for Braced Cantilever.

B. (LONDON) writes: "I want to support a distributed load of 10 tons on a cantilever, braced as shown on drawing (not reproduced), but cannot get a stress diagram to close or show any stress in the centre boom. I find no difficulty in drawing the stress diagram for lattice bracing without the centre boom."

—The frame diagram of the cantilever, with the loads given by querist, will be shown in Fig. 1, and in order to work out a stress dia-



gram, substituted members shown by the dotted lines must be used. The stress diagram, Fig. 2, may then be readily worked out, and it will be seen that the central horizontal member has no stress at all.

HENRY ADAMS.

Painted Plaster Blackboards.

H. N. (NORTHAMPTON) writes: "It is proposed in a secondary school to have blackboards on one side of each class room, and grounds have been fixed to finish plaster to the back of blackboards. What do you consider the most satisfactory filling to use, and how should it be finished? Parian finished with lamp-black and gold size has been recommended, but I do not know the proportions."

—The objection to the use of lamp-black and gold size is the difficulty of keeping the mixture from drying glossy in patches. A better method is the application to the plaster backing of Ripolin, Paripan, or similar enamel (egg-shell flat quality) to which an addition of fine pumice powder, one part by weight to four of paint, has been added and well mixed in. The pumice powder is of the ordinary kind as used in felting down, and the painting can be done in the ordinary way. As a background, Parian or Keene's cement will be suitable—if the

latter, it should receive one coat of red lead and boiled oil while freshly done.

G.

Measurement of Polishing.

O. K. (ST. ANNES) writes: "I have recently supplied and fixed a large quantity of oak panelling and dado. The polishing was agreed to be done at a given price per ft. super. What is the correct method for measuring the polishing? I have measured the cornice and skirting at per foot run, and the panelling at per foot super. In measuring, I have girthed all moulds, muntins, rails, edges, returns, etc. We differ, however, in the following respect. My polisher wants an allowance of one inch in length and width of every panel over the ordinary measurement. That is to say, a framing 3 panels high and measuring in the ordinary way 7ft. 6ins. he claims 7ft. 9ins., and if, say, 8 panels wide, girth measured 10ft. 3ins., he claims 10ft. 11ins., his reason for this being that the panels were bodied in and partly polished before being fixed in the framing, consequently he measures to the edge of the panels in the groove. What is the usual custom?"

—The method of measurement described is that usually followed, and the allowance claimed by the polisher would be unreasonable under ordinary circumstances. Work is usually specified "Polished on all exposed surfaces." Unless special orders were given the bodying-in of the panels was presumably done before fixing for greater ease of manipulation. X

Laying a Brick Rubble Tennis Court.

G. S. H. (LONDON, S.W.) writes:—"Please give particulars for laying down a brick rubble and 'kilm dust' lawn tennis court."

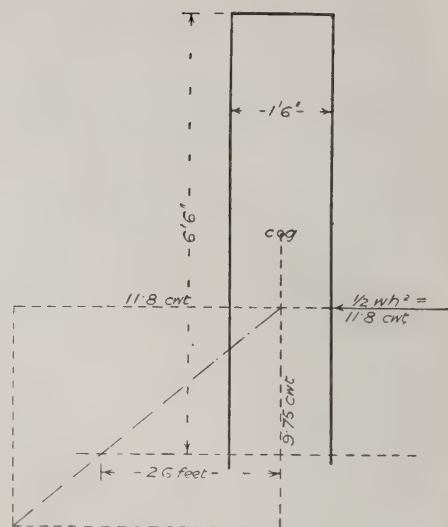
—To construct a brick rubble tennis court the ground should be levelled over an area of 120 ft. by 50 ft. and thoroughly drained; then a layer of rough brick rubble or clinkers 4 in. to 6 in. thick should be laid over the ground, this to be covered with a layer of broken brick rubble to pass through a 2 in. sieve. The top layer to be kiln dust or hard engine ashes about $1\frac{1}{2}$ in. thick, thoroughly rolled and consolidated. The kiln dust can be obtained from any brick-field by arrangement. It is advisable to have grates for carrying heavy rainfalls, though if properly constructed these are not absolutely necessary. The drains underneath the rubble ought to be filled with rough material to ensure quick passage of water from the court.

Strength of Wall for Effluent Tanks.

N. B. (BATLEY) writes: "I enclose herewith a plan [not reproduced] showing a brickwork water purifying plant, upon which I should like your opinion as to its strength for the intended purpose. The two tanks (the main tank and the filter) are to contain together about 10,000 gallons of water. The sludge filter need not be taken into consideration. What I shall be pleased to know is, whether the walls are strong enough for the purpose. They would be built of good bricks in cement. The small trough over the large tank does not enter into the calculation."

—The weakest part will be in the centre. The accompanying diagram shows the effect of the water pressure on the division wall of the main tank wall next to sludge filter, between tank and filter, the resultant cutting the base at 2.6ft. from its centre. Then

$$\frac{W}{A} + \frac{M}{Z} = \frac{9.75}{1.5} + \frac{9.75 \times 2.6}{\frac{1}{8}(1 \times 1.5^2)}$$
$$= 6.5 + 67.6 = 74.1 \text{ cwt. or } 3.7 \text{ tons per sq. ft.}$$
compression and 61.1 cwt. or 3.05 tons per sq. ft. tension. The division wall ought to resist this safely, and the same stresses will occur at the same depth of the outer wall, but this wall is unsupported for some 4ft.



deeper. If the pipes were built in with their flanges close to the wall, they would give additional support. Iron ties might also be built into the wall and the concrete bedded round them.

HENRY ADAMS.

Hotel Planning.

E. W. L. (BRIGHTON) writes:—"Can you inform me of any publication on the planning, construction, and equipment of modern first class hotels?"

—We are not aware of any book on modern hotels. A paper entitled "Hotel Planning" was read by Mr. Stanley Hamp before the Royal Institute of British Architects on April 8, 1907, but this is now out-of-print and unobtainable.

CORRESPONDENCE.

Ruislip Estate Scheme.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to your leading article in your last issue, in which you describe the first-premiated plan for the Ruislip Manor Estate, we desire to draw your attention to a trifling misstatement. In describing the treatment proposed for Windmill Hill, you state that a reservoir is suggested situated on the top of the Hill. It was not our intention to make this provision, and it is probable that you mistook the word "reserved" for "reservoir" on the plan. As will be seen from the précis of our report printed in the same issue, two plots are proposed to be reserved for fire station, public library, or other such building. However, the accidental suggestion is not without value, and we thank you for it.

Yours faithfully,

A. AND J. SOUTAR.

Wandsworth.

Waring and Gillow, Ltd.

A circular has been issued to the shareholders in this company requesting their attendance at an Extraordinary General Meeting to be held on January 26th, at the Cannon Street Hotel, for the purpose of considering a resolution for the appointment of Mr. William Plender, President of the Institute of Chartered Accountants, as Liquidator pending the consideration of a reconstruction scheme, and we are informed that a circular will shortly be issued calling a meeting of creditors. As some misapprehension has been expressed, the Directors desire to repeat that the business is being carried on in all its branches as usual.

NEW BOOKS.

Sanitary Law.

It would be an immense advantage to have the bewildering number of Acts relating, casually or specifically, to sanitary law consolidated or codified, so as to afford those who have to obey them a reasonable chance of becoming aware of their existence, if not of understanding them. Dr. Porter, who has a twofold qualification for the task, being at once a medical officer of health and a barrister-at-law, has produced for the use of students of public health a handbook that at least indicates a narrow pathway through the morass, and will probably serve other uses besides those to which it is professedly dedicated. It is thrown into the form of question and answer, a method that has much to recommend it, and was at one time in universal use in educational books—as our grandparents, with reminiscences of “Mangnall’s Questions,” “Pinnock’s Catechism,” and of sundry little books on architecture, could testify. The method, though long ago discarded, seems to be educationally sound, a printed question being an unrivalled means of stimulating attention and concentrating the mind upon specific points, and Dr. Porter employs it with excellent effect. The book, although of slender proportions and low price, must have involved an immense amount of labour in the preparation; whereby Dr. Porter has earned the gratitude of all whom he thus absolves from the heart-breaking task of digesting the law for themselves. The book is of equal value to public officials entrusted with the administration of the sanitary laws, and those persons who, like architects and builders, are compelled to meet official requirements.

Sanitary Law in Question and Answer.—For the use of Students of Public Health. By Charles Porter, M.D., B.Sc., M.R.C.P. (Ed.), of the Middle Temple, Barrister-at-Law, Medical Officer of Health, Marylebone, etc. Longmans, Green, and Co., 39, Paternoster Row, London; New York, Bombay, and Calcutta. Pages xiv.—150. 5½ins. by 7½ins. 2s. 6d. net.

A Guide to Valuation.

Primarily written as a text-book for students and candidates essaying the examinations of the Surveyors’ Institution, Auctioneers’ Institute, etc., Mr. Clarence A. Webb’s book on “Valuation of Real Property” must nevertheless have fulfilled its author’s hopes that it would also be found of use to house, land, and estate agents, and to others who are beyond, or are at least outside, the state of pupillage; for we now have it in a second edition, revised and enlarged, with the important addition of a chapter on the new land values taxation included in the Finance (1909-10) Act, 1910; and there are suggestions as to the filling of Form IV.

In the first chapter, the principles of valuation are very clearly set forth, and exemplified with respect to various tenures and interests by means of typical cases. Other chapters relate to the value of land and buildings taken separately, valuation for mortgage, timber measuring and valuing, arbitration, compensation for compulsory purchase, valuation for rating, valuation for taxation, enfranchisement of copyholds, compensation under the 1904 Licensing Act, and valuation for fire insurance claims. A final chapter treats of the construction of valuation tables, of which several useful examples are included. Architects and builders, as well

as those to whom the work is perhaps more specifically addressed, will find it very informing on subjects with which they ought to possess at least a fair degree of familiarity. They will find Mr. Webb at once a luminous and a safe guide.

Valuation of Real Property.—A Guide to the Principles of Valuation of Land and Buildings, etc., for various purposes, including the Taxation of Land Values. With numerous examples. By Clarence A. Webb, valuer and rating surveyor, Professional Associate of the Surveyors’ Institution, etc. Second edition, revised and enlarged. London: Crosby, Lockwood and Son, 7, Stationers’ Hall Court, Ludgate Hill, E.C., and 121A, Victoria Street, S.W. 5½ins. by 8½ins. Pages xii.—332. Price 7s. 6d. net.

An Encyclopædia of Municipal and Sanitary Engineering.

For this work it is claimed, with perfect justice, so far as we are aware, that it is the first of its kind. The literature of the subject is voluminous, municipal and sanitary engineers being remarkably prolific in authorship; but the innumerable papers, reports, articles, pamphlets, and other treatises they have produced make, in the aggregate, a chaotic and altogether unwieldy mass, in which a vast amount of exceedingly valuable information lies almost hopelessly buried. To Mr. W. H. Maxwell and Mr. J. T. Brown has occurred the happy idea of digesting this mass of materials; and the result appears in a handsome volume of moderate cost, in which the whole subject, in its various phases, is dealt with in the only really practical way—that is, in the form of an encyclopædia, in which the alphabetical arrangement, while it necessarily involves a certain amount of repetition and overlapping, is undoubtedly the most convenient method for reference. The editors, who have enlisted the co-operation of about forty contributors of unquestionable authority, have adopted the fair and wise course of affixing the initials of the authors to the more important articles—fair, because it is due to the respective writers to give them full credit for their work; wise, because the value of the information in any given instance can be more properly appreciated when one knows who is responsible for it—a point that is of special importance where systems or methods are sometimes in rivalry.

The volume, so far as we have been able to test it, has been conceived and carried out in the right scientific spirit. For a one-volume encyclopædia, it is not over-bulky; and by the use of smaller type and smaller-scale diagrams, and by the more rigid condensation of the articles, some of which show a tendency to elaboration, as if the authors had not quite overcome the lecturer’s habit of discursiveness, the book might easily have assumed still more modest proportions. In that case, however, it would inevitably have lost much of its present handsome appearance, to say nothing of its legibility; but as the subject continues to grow, such methods of compression as we have ventured to indicate will probably become necessary. We should have liked to see more attention given to what may be called the bibliography of the subject. Although many of the articles are, as we have said, unusually copious, one cannot reasonably look to an encyclopædia for absolutely exhaustive treatises under the various headings, but rather for concise summaries, with indications of the sources of other and fuller investigation. It may further be suggested that an analytical index would have been useful; for although the articles are, of course, in alphabetical

order, it frequently occurs that one does not always know off hand under which heading to look for certain items to which the article-heading offers no precise clue—a deficiency that a good analytical index would supply. This difficulty, however, has been anticipated, and partly met, by the insertion, in bold type, at the head of some of the sections, of a sort of syllabus of the contents; which, however, does not answer the purpose of a good index. The volume, nevertheless, fulfils a distinct want, and municipal and sanitary engineers will be grateful for it.

The Encyclopædia of Municipal and Sanitary Engineering.—A Handy Working Guide in all matters connected with Municipal and Sanitary Engineering and Administration. Edited by W. H. Maxwell, A.M.Inst.C.E., and J. T. Brown, M.R.San.Inst. London: Constable and Company, Ltd., 10, Orange Street, Leicester Square, W.C. 562 pages. 8ins. by 10½ins. 42s. net.

An Introduction to the Chemistry of Paints.

In no subject, with the doubtful exception of cement and its uses, has greater or more rapid progress been made of recent years than in that of the scientific investigation of the physics and chemistry of paints. As the author of this treatise observes, “the very name of chemistry is enough to frighten many practical men, for the simple reason that the majority of chemists will persist in laying such stress on symbols and formulæ, atoms and molecules. The consequence is that, before the student can begin to acquire a really practical and useful knowledge of chemistry, he has to wade through and memorise a number of (to him) dull and isolated facts, which might well be left out altogether, or at any rate reserved until the student has reached a more advanced stage. As the practical man has neither time nor inclination to do this, he not infrequently leaves chemistry severely alone, and therefore fails to appreciate its value and importance.” This is undoubtedly true; and, as the author would be probably among the first to acknowledge, it is usually as difficult to persuade the gods to come down from Olympus, leaving their formulæ behind them, as it is to induce the “practical man” to attempt the ascent. Consequently there is some danger of a mutually mischievous estrangement between the chemist and the practical man—the former lacking a good deal of the practical knowledge, the latter missing the scientific tips that would be invaluable to him in practice. Dr. J. Newton Friend approaches his subject in full knowledge of the needs of the situation, and consequently he has produced a book in which much valuable information is plainly and intelligibly imparted to the student, the painter, the manufacturer, and the colour mixer. The architect would be none the worse for a perusal of this compendious manual, which will tell him, for instance, exactly why certain pigments are inherently incompatible, and must therefore never be used in conjunction; how various annoying occurrences—cissing, cracking, peeling, pitting, ropiness, tackiness, and so forth—arise, and hence how they may be avoided. Altogether, it is a very useful little book, produced by a chemist having thorough knowledge, and the happy knack of retailing it for practical application.

An Introduction to the Chemistry of Paints. By J. Newton Friend, Ph.D. (Wurz.), D.Sc. (B’ham). With diagrams. Longmans, Green, and Co., 39, Paternoster Row, London; New York, Bombay, and Calcutta. Pages x.—204. 5ins. by 7½ins. 3s. 6d. net.

FIRE PREVENTION NOTES.

*Neglected
Precautions.*

An obvious truism, which with many another plain and incontrovertible fact is commonly ignored in practice, is that "if a fire has nothing to feed on, it will not spread." Yet we go on loading buildings with woodwork. With regard to fire extinction, it has been pointed out that the best form of construction is that which keeps the fire in full sight when once it has started. Where woodwork is involved, however, the greatest obstacle is that of locating the fire, which may send out smoke from a dozen places, through the hollow walls, and from floor to floor. But whilst the spread of fire from room to room is appallingly rapid where the partitions and doors are constructed of wood, the walls in concrete construction are absolutely incombustible, and a concrete partition, providing that the necessary openings for windows and doorways are closed with metal doors and ribbed glass windows, affords a natural barrier against the spread of fire. The sudden breaking-out of fires will go on for ever; but, with proper construction, it will always be possible to have the fire in full sight, so that it can be instantly seen and attacked. With the use of fireproof doors the horizontal spreading of fire can be pretty easily checked; such doors at least confining an ordinary fire to one room until it can be handled. The vertical spread, however, is more difficult to deal with, stairways and wells tending to aid its progress. It is, however, quite possible to keep combustible goods away from such openings. And stairs and rails may be made of concrete; and, where possible, wired glass should be used for the windows.

The shocking railway disaster which happened at Hawes just before Christmas, was so horribly complicated by fire as to lead to an instant general enquiry as to whether by any means this additional danger can be prevented. In the course of this enquiry, it was recalled that the Board of Trade has no statutory power to impose regulations on the railway companies, the utmost influence it can exert being in the form of recommendations. The Board, however, will no doubt feel compelled to issue some manifesto on the subject, and this, if based on trustworthy expert opinion, will no doubt receive due attention. A correspondent of the "Times" seems to think that very little can be done beyond providing fire-extinguishers, and axes or other implements for forcing an exit. He suggests, however, that the mischief wrought by fire being greatly increased, if not actually introduced by the gas which is so largely carried for illumination, the substitution of electric light on trains would greatly reduce the risk from fire. But electricity also has its special dangers.

*Relief Appli-
ances Abroad.*

In Canada and in the United States, it is compulsory that appliances for rescue and relief shall be carried on the trains. There, however, the trains constantly run through enormous tracts of country even much more remote from the haunts of men than is the scene of the disaster to the Scotch express; whilst in this country the unoccupied areas are so small that the carrying of

relief appliances has not hitherto strongly suggested itself as a necessary precaution. The "Times" Paris correspondent writes that "it would be nearly as futile to discuss life-saving appliances on French railways as to write about the snakes of Ireland." At present, he says, the Paris-Orléans Railway, has the most modern rolling stock, but, beyond the occasional presence of a few portable fire-extinguishers in the corridor carriages, there is no visible display of appliances for dealing with an emergency. On the great system of the Nord Railway such appliances are seen, but they are only to be found in the through German corridor carriages which arrive daily on the expresses from Berlin or Cologne. Many of these carriages not only contain the little locker behind the glass panel in which are an axe, a coiled rope, and other articles for use in emergency—they also exhibit directions for opening the plate-glass windows outward in case of accident. These precautions were introduced in Germany a few years ago, after some lives had been lost by fire following upon an accident.

*Precautions in
Prussia.*

The accident and fire precautions observed in Prussian express trains are enumerated by the Berlin correspondent of the "Times" as consisting of the provision of a fire-extinguisher filled with carbonic acid, and a hatchet and saw hung in a glass-fronted case on the corridor wall of every carriage. The illuminant is sometimes electricity, generated by a dynamo carried underneath the locomotive, and sometimes gas which is carried underneath the carriages in tanks, which are filled from reservoirs at the stations. The large windows usually seen on Continental railways were introduced in Prussia mainly with a view to easy escape in case of accident. Several correspondents concur in the opinion that if such appliances as saws, axes, sledge-hammers, and small screw-jacks had been available on the Scotch express, suffering and loss of life might have been avoided.

*Is a Fireproof
Train possible.*

It is rather surprising that, in the course of the extensive discussion of the Hawes Junction railway accident, nobody seems to have suggested that the railway carriages themselves ought to be, and might be, constructed with some regard to incombustibility, so that instead of igniting with the utmost facility at the first opportunity, they would offer considerable resistance to fire. We venture to throw out the suggestion that, at the forthcoming Building Exhibition, some of the manufacturers of fire-proofing specialties might make a very attractive exhibit in the form of a railway carriage constructed on fireproofing principles. There seems to be no reason why the adoption of minor preventive measures should be much more impossible or much less effectual in the case of railway carriages than in that of stationary buildings. Of course, you cannot yet build railway carriages of reinforced concrete, versatile and adaptable as that material is; but it is possible to construct them of treated wood, or to apply to them some form of protective coating which would resist ignition at least for the short but infinitely precious time during which rescue might be effected. In this connection, it is interesting to record that a trial trip was run on January 4th,

on the District Railway, from the Mansion House to South Harrow, of a train composed entirely of the new all-steel cars which will in time supersede the carriages at present in use on the line.

*The Sidney
Street Fire.*

Probably not since the Gordon riots of 1780, when the gaol of Newgate and some other large buildings were destroyed, has a building been fired by being subjected to a state of siege such as that which occurred in Sidney Street, Mile End Road, on January 3rd, during the attempt to capture the supposed murderers of policemen at Houndsditch. Beyond the extraordinary origin of the fire, no noteworthy point arises, except, perhaps, that which may possibly have to be taken into consideration with respect to the settlement of insurance claims, when an extremely complicated problem may arise for solution; the circumstances being happily without exact precedent in this country. This is a matter, however, that does not intimately concern us.

*An Odd Fire In-
cident Recalled.*

The recent death of Lord Wrottesley recalls the fact that his family seat was one of the fine old country mansions of which so many have been lost by fire. Wrottesley Hall, near Wolverhampton, was burnt down on December 16th, 1897, and in it a fine library and many historical deeds and documents perished. The hall was begun by Walter Wrottesley in 1685, and completed in 1698. A curious incident, which excited much comment at the time, was the refusal of the Corporation fire brigade to attend the call, because it was under instructions not to attend fires outside the borough boundaries! Lord Wrottesley decided, owing to his advanced years (he was born in 1824), not to rebuild the Hall, but to live mostly in London; where the fire-service demarcation question was at all events less acute, even towards the *fin de siècle*, than it appears to have been in some of the provinces.

*Chapel as
Fire Station.*

Zeal for the protection from fire of a venerable building does not often lead directly to its disfigurement. An exception to this rule is recorded in the French newspapers. In a paragraph headed "The Reign of the Vandals," it is recalled that the Tonnerre Hôtel Dieu is a most interesting historical monument, having been founded in the thirteenth century by Margaret of Burgundy, wife of Charles of Anjou; and from time to time it has been reverently kept in repair. The original hospital was transformed into a chapel; where the local fire brigade is now allowed to house its appliances. Over the fine old doorway is hung up a signboard on which is painted, in big black letters, the beautiful legend, "*Pompe a incendie!*" Unfortunately it is necessary that the means of prevention from fire should be rendered somewhat obtrusively conspicuous; and many a fine building is disfigured by its arrays of red pails, coils of greasy hose, and hideously lettered indications of what to do and where to go in case of fire. These things have to be endured; but surely their horrors might be mitigated by some attempt at a more artistic display of resources. But probably we cannot show any parallel to that French instance of converting a venerable chapel into a fire-station.

PLANNING AND DESIGNING ELECTRIC CINEMA THEATRES.

BY E. C. MORGAN WILLMOTT, A.R.I.B.A.

What are generally known as electric theatres, though possibly they might be more conveniently called electric cinema theatres, seem likely to become universal, and perhaps permanent. Some particulars in regard to the architecture and planning of buildings suitable for such purposes should therefore be of use and interest.

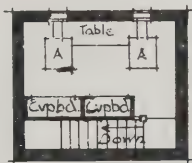
THE conditons and requirements for electric cinima theatres are such as to make the ordinary rules of theatre planning more or less inapplicable. Economy must be carefully considered, as the prices for the entertainment are so low as to render an extravagant initial outlay out of the question. It must also be borne in mind that the secret of the success of the entertainment is its starting early in the morning and finishing late at night, and that this peculiarity affects the planning. Another item to be borne in mind is the reversal of the usual order of the seats. Most of the earlier plans show the better class seats at the back, and the cheaper seats in the front of the auditorium. It is to be further noted that, in London at least, the Lord Chamberlain's rules as to ordinary theatre planning apply equally in regard to electric theatres. Some of the West End picture entertainments can command comparatively high prices, and there is a consequent increase in the amount available for the decoration and equipment of the building. In these cases the generally accepted principles of theatre planning can be adapted to the designing and planning of the more luxurious types of electric theatres.

The special provisions insisted upon by the Government for the protection and safety of the people attending such entertainments are touched upon in this article as the various points arise.

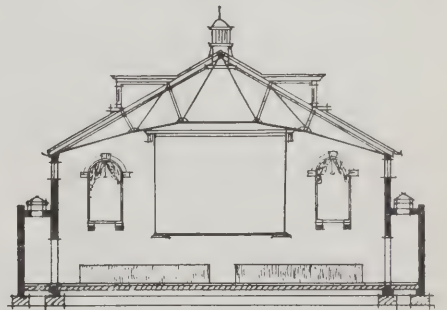
General Requirements.

The essential accommodation comprises a comparatively small auditorium to accommodate any number ranging from 300 to 500 people. Strictly speaking, one ought not to speak of the body of the hall as an "auditorium," but it is a convenient and familiar term, and perhaps its justification may be assumed by the provision for some form of orchestra; and, further, an entrance vestibule, pay-boxes, and box-office; manager's office, entrance lobbies, and exits; chair store, and lantern-room.

The lantern-room is of the first importance, and must be situated at the back of the auditorium, and usually about 14ft. above the level of the latter, in order that there shall be no interference with the free lighting of the screen. For this room, 12ft. by 15ft. is a good size; and it must be built of concrete or other fireproof material throughout, with efficient roof ventilation. This may be provided by means of an efficient air pump ventilator, or a small sliding roof, or even an ordinary opening skylight. Two cinematograph machines are necessary, one being alternated with the other as either becomes inconveniently hot. The machines, which cost about £25 each, are supported upon solid concrete bases, in order to reduce any possible risk of vibration. Openings are provided in the walls of the lantern-room for the transmission of the rays from the lantern. These openings, which are kept as small as possible, must be properly provided with small self-locking steel roller shutters or blinds, and



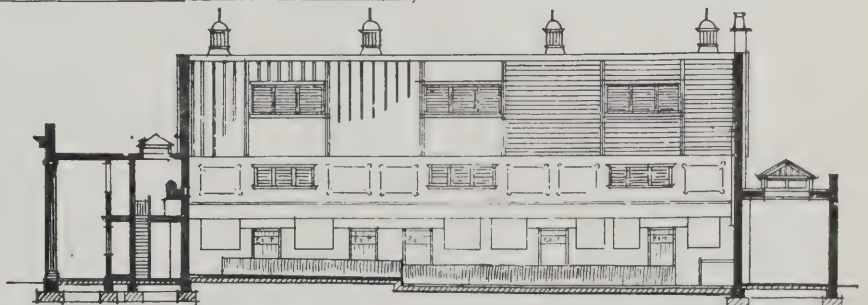
Plan of Lantern Rm.



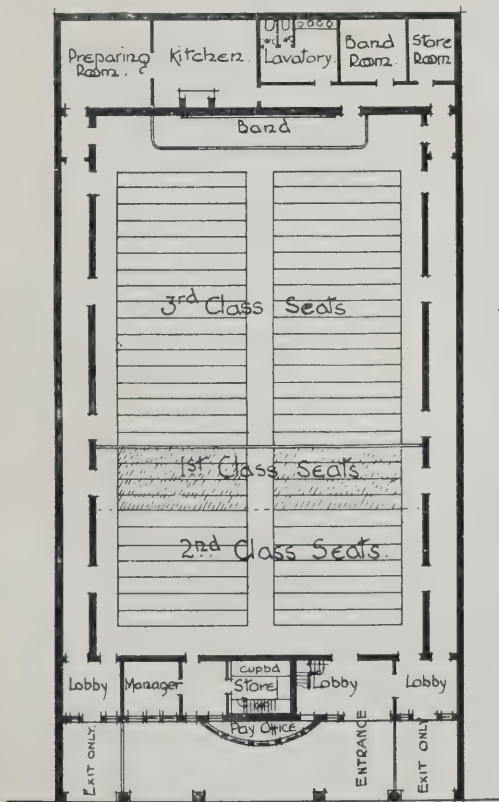
Cross Section



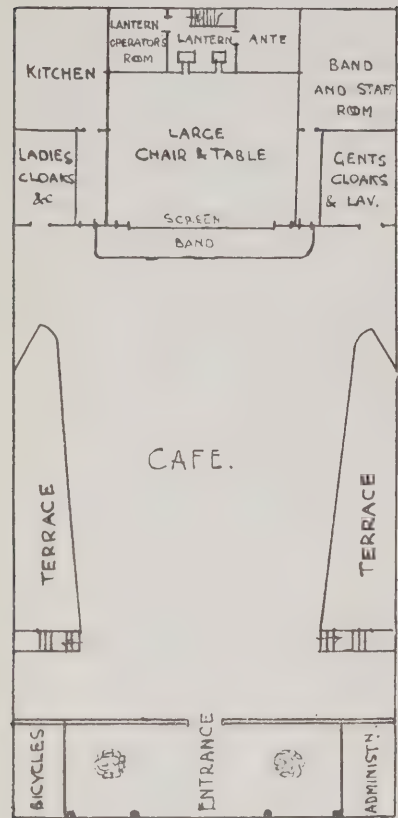
1st Floor Plan (over Entrances etc)



Longitudinal Section.



Plan of Ground Floor.



PLAN OF A FRENCH CINEMA THEATRE.

one of these blinds must be fixed upon the outside of the opening, and another upon the inside.

The Lantern-room.

The entrance to the lantern-room must have a self-closing tightly fitting door, constructed of fireproof material. The openings through the walls for the various pipes and cables must be properly bushed. In some cases the general arrangements of the planning necessitate the lantern house being placed in the auditorium, although this is to be avoided where possible, as effective ventilation of this enclosure is not then so easily arranged for.

It is imperative that no smoke shall under any circumstances be allowed to escape into the auditorium. Hence the ventilation scheme for the lantern-room or lantern-house must not communicate internally with the general body of the building. Attention is directed to a regulation which provides that the enclosure or lantern house, when placed in the auditorium, shall be safeguarded from any chance of the public coming near it by the provision of a substantial barrier erected 2ft. from the walls, and totally around the lantern house.

The Lantern.

Lanterns must be provided with a metal shutter between the source of light and the film gate. The film gate must be of massive construction, and provided with ample heat-radiating surface. The passage from the film must be sufficiently narrow to prevent flame travelling upwards or downwards from the light opening. Cinematograph projectors must be fitted with two metal film-boxes of substantial construction, and not more than fourteen inches in diameter, inside measurement, and to and from these the films are made to travel. The film-boxes are made to close in such a manner, and are fitted with a film-slot so constructed, as to prevent the passage of flame to the interior of the box. Spools are chain or

gear driven, and films are wound upon spools so that the wound film shall not at any time reach or project beyond the edges of the flanges of the spool. Provision must be made in the lantern-room for sufficient space for a number of metal boxes conveniently arranged in shelves or cupboards. These will contain inflammable films.

An Example from South Wales.

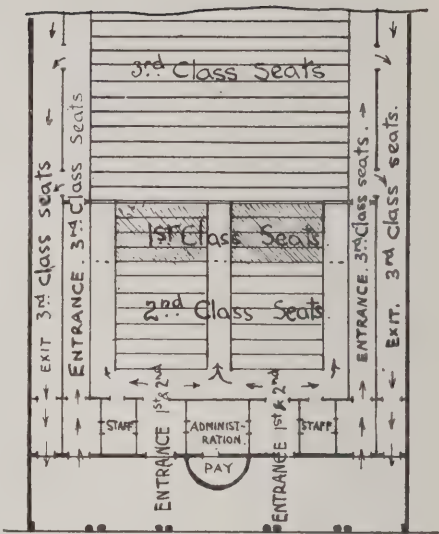
The illustrations shown on page 65 represent the designs of a cinematograph theatre which the author and his partner have erected in South Wales, and as it conforms mostly to the general arrangements advocated throughout this article, a detailed description is likely to be of use. Entrance is obtained from a roomy columned vestibule with entrance lobby and pay office at the back. This, in its turn, gives on to another lobby leading to a passage-way arranged along the whole side of the building.

Seating Accommodation.

The better-class seats, which are arranged at the back, should not be subjected to inconvenience from people constantly going in and out. Consequently, those desiring to have a cheaper seat would enter by the passage arranged on the right-hand side, and no inconvenience would be occasioned to those situated in the better-class seats at the rear, and who would enter their seats through the first lobby situated immediately to the left of the pay-box and store. Ordinary exit for all would be obtained into the exclusively arranged exit passage on the left-hand side; but in case of emergency, exit direct and simple would be obtained from wide doors properly fitted with panic bolts opening on to both side passages. These passages must be wide enough to contain all within the building; and the walls and roof (with their lights) should be built of fireproof material.

The Screen.

The permanent screen must be hung, of course, on the end wall, while space must be provided in front for a sunk and railed orchestra space. The distance between the front rail of this space and the nearest point of the front seats must be at least 4ft., while central and side aisles should be respectively at least 5ft. and 4ft. wide. Behind the screen wall are



PORTION OF PLAN SHOWING ALTERNATIVE ARRANGEMENT OF ENTRANCES.

arranged a kitchen and preparing or serving room. These are suitable adjuncts to a building of this description, because in some of the latest theatres it is usual to provide light refreshments; staff lavatories, a band-room possibly, and a necessary store-room, are also placed at the back of the building.

The Floor.

The floor must be well graded; and preferably the better-class seats are arranged at a slightly higher level than the seats in front. Of course, the higher level will also have a convenient slope towards the screen. This is either hung upon spring rollers or stretched upon a patent steel frame; or, the walls can be whitened, with a neat (and perhaps ornamental) cement architrave of Keene's cement around them. The minimum size would be 15ft. square.

From the main entrance lobby a stairway leads to some boxes arranged at the back; and the general experience of cinema theatre promoters suggests that as large a number as possible of small private boxes should be provided. In the front are a manager's room and a store; and access to the lantern-room is by means of a reinforced concrete or other form of fireproof stairs. A detailed elevation



shows the main entrance loggia with a convenient series of hinged frames for displaying advertisements relative to the shows.

Treatment of Elevations.

An urgent plea is extended for the better treatment of the elevations of these buildings, there being no reason in a permanent building why the design should not pretend to some architectural interest. In the design under notice, while consideration has been devoted to the conventional architectural motif expected by the public in buildings of this sort, it is hoped that no loss of dignity has been suffered, and that the design does not in any way respond to the "wedding-cake" idea that predominates in many of the elevations of the latest of these buildings. This design is carried out in white Carrara ware, and not in plaster, which is a material consideration when orthodox architectural forms are employed.

The wood panelling bay and surrounds are wax-polished walnut, with a green

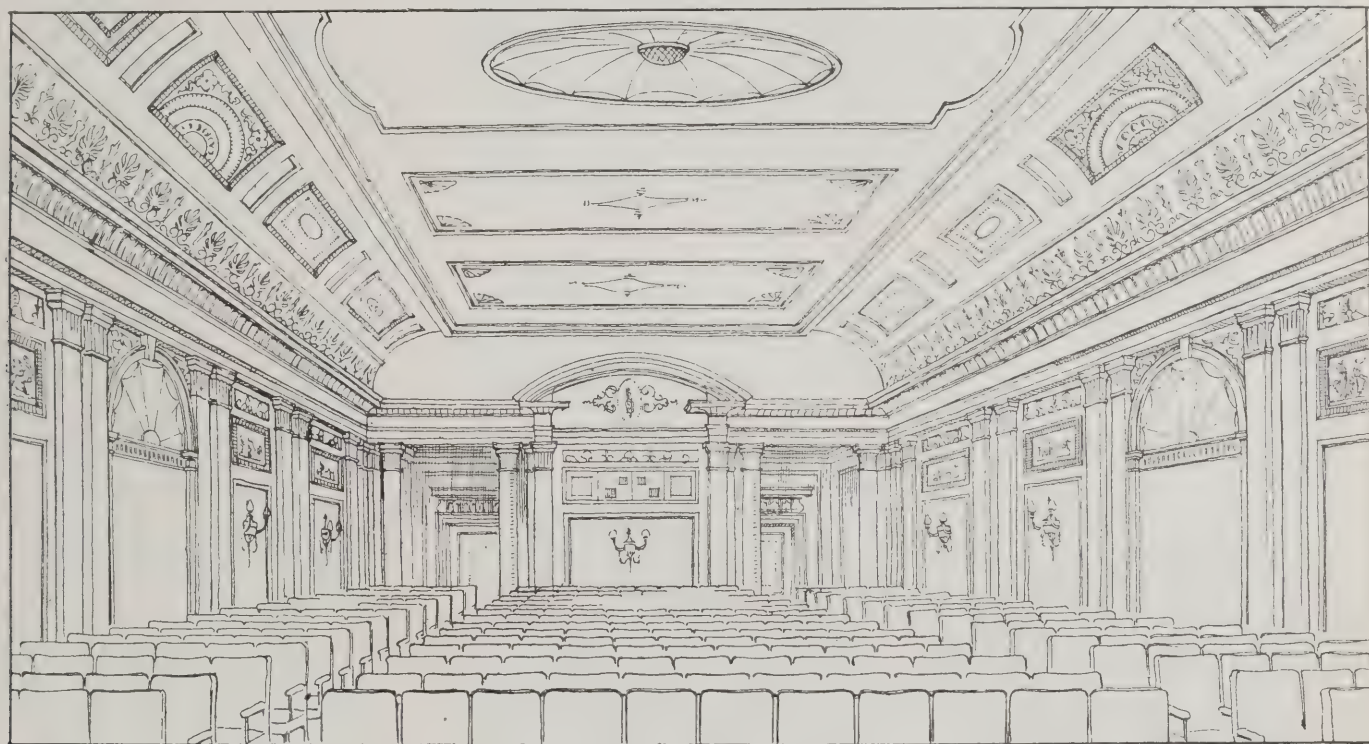
points of interest in so far as they differ from the first mentioned plan. The lantern house is behind the screen, and therefore quite safely detached from the portion of the building occupied by the general public. The screen is a French patent recently perfected, and allows for the pictures showing through to the audience without any loss of brilliance. The opening in which same revolves is protected by another fireproof screen, which can be conveniently dropped at any moment. Two fireproof doors on either side give access to the various offices in connection with the management. The auditorium is narrow and long, and is arranged as a café, with chairs and tables, adequate service rooms, larders and kitchens being provided. The whole of the front entrance is practically one huge roller shutter with doors in same. Hence, in case of emergency, it is easy at once for the attendant to open up the whole of the auditorium to the street. It will be noticed that the lantern house is

not only shall the general arrangements be controllable from the lantern house, but that there shall also be separate and independent means of control outside, and away from the enclosure.

Where there are special circumstances preventing the use of electric light for the lantern, nothing other than lime-light is approvable, and special regulations are enforced in regard to the use of this illuminant. Natural lighting need be practically nil. In the first design under notice this is obtained from small windows high up, provided with screens worked by the same gearing that will work the fanlights of these windows. Glazed louvre lights are used in the dormers shown.

Electric Theatre for Westminster Bridge Road, S.W.

Owing to the footpath in front of the site being rather narrow, the front of this theatre has had to be recessed, in order to allow a space for the public to congregate without blocking the footpath. The



INTERIOR VIEW
FROM SCREEN

ELECTRIC THEATRE WESTMINSTER BRIDGE RD

FAIR & MYER A.R.I.B.A.
39 FURNIVAL ST
E.C.

glazed plinth. With regard to the architectural treatment of the interior, the necessity for strict economy debars any great outlay in the way of decoration.

Fireproofing Imperative.

Construction throughout must be of fireproof character, the roof being preferably of iron, with a segmental roof under for plaster upon metal lathing. The walls may be of brick or concrete; the floor is of concrete and wood-block. An alternative arrangement for the entrances is illustrated on page 66, a central entrance leading to the better-class seats, with exclusive side entrances leading through side passages to the cheaper seats. This arrangement leaves the large side corridors perfectly free as emergency exits, while inconvenience to occupants of the better class seats is quite done away with.

A French Example.

An illustration on p. 66 shows a plan of a French cinema theatre, which presents

not (as is usual) interposed between the public and the street, but is arranged quite safely away from the audience, and with an impassable fireproof wall in between it and the public. A good idea is the provision of a bicycle store at the entrance, under the charge of the attendant in the pay office.

Arrangement of Seats.

Some other and more recent plans reverse the usual arrangements, and place the screen at the entrance end of the hall, and the lantern at the back end. This gives quite obvious advantages.

Often a flat roof is arranged with sliding light. Sometimes plans are complicated by the problem of shops in front with offices over. Balconies are sometimes arranged, especially at the back.

Fire Appliances and Lighting.

Proper fire appliances must be provided. The lighting of the auditorium is preferably electric light, and it is essential that

proposed exterior is simply treated in red sand-faced stocks and Bath stone, the roof being of green slates. Internally the foyer has a groined plaster vaulted ceiling, the walls being decorated with moulded plaster panels. A special feature has been made of the interior of the picture theatre, which has been designed in pure Adam style, the walls to be finished white and the ceiling delicately enriched. The mechanical effects and electrical musical instruments to be installed will be very complete. The architects are Messrs. Fair and Myer, A.R.I.B.A., of London and Manchester.

Harper Electric Piano Co.'s Building, Holloway Road, N.

This building has been designed to hold 1,000 spectators, and in addition to the electric theatre there will be a small public hall, a café and skating rink all adjoining. In front of the electric theatre there will be a paved forecourt with a terra-

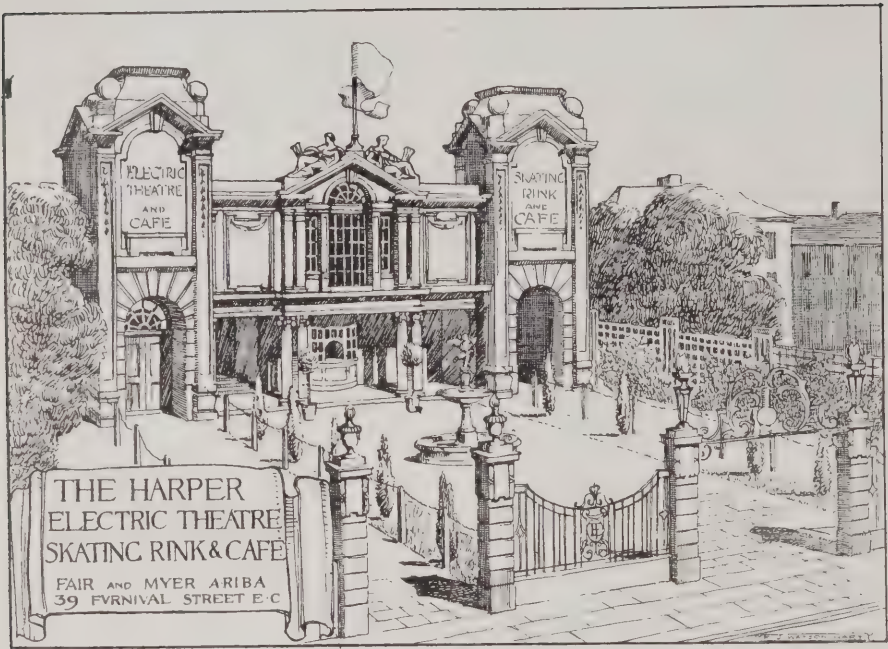
TUITION
BY CORRESPONDENCE.

It is beyond question that many of the most successful educational institutions of to-day are those which are conducted on commercial lines and have a business basis. "Private adventures" of the kind were at first looked upon with some degree of distrust in this most conservative of countries, where education in all its branches was long regarded as being the monopoly of ancient foundations, of State-aided schools, and other institutions whose existence largely depended on benevolent contributions or "grants in aid."

By degrees, however, the public have become familiarised with the idea that educational institutions can be run on business lines, and it has even been discovered that, in order to justify and maintain its existence, a self-supporting institution of this character is bound to acquire and maintain a well-marked reputation for efficiency.

Such institutions may afford an excellent means, not only of supplementing the notoriously inadequate curriculum of the ordinary schools, but also of meeting specifically a well-ascertained need for which, apparently, no other provision is made: they fill a gap.

Take, for example, the case of the young architect whose principal has for some reason or other—perhaps unavoidable—fallen short of his duty towards his artiled pupil. What is the young fellow to do, supposing



cotta fountain, ornamental piers, and decorative wrought-iron palisading. The floor and steps of the foyer are all marble, the walls being enriched with plaster decoration. The main floor of the theatre has a fall of one in ten, the walls and ceiling being rather elaborately treated with plaster enrichments. The roof is constructed with steel principals, the outside being covered with slates. The whole of the music will be produced mechanically and controlled from the operator's room, the instruments used being the orchestra and electric piano for orchestral music, and a powerful gramophone for "singing pictures." The exterior of the building will be finished in white egg-shell glazed vitreous ware. The architects are Messrs. Fair and Myer, A.R.I.B.A., of London and Manchester.

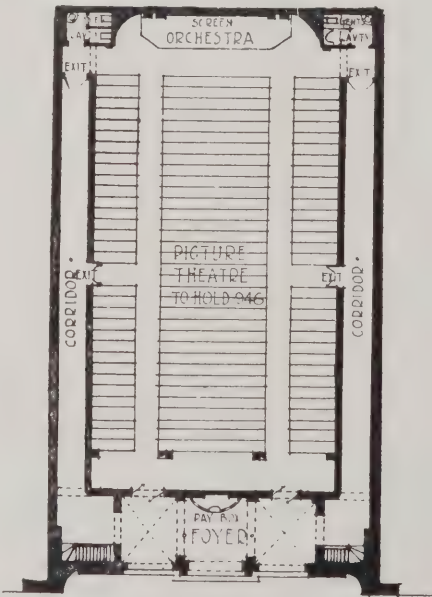
A Bristol Picture Exhibition.

A picture theatre which has been erected at Zetland Road, Bristol, under the direction of Mr. W. H. Watkins, A.R.I.B.A., is capable of accommodating 1,400 persons, 1,000 of whom can be seated on the ground floor and the remainder in the balcony. The external elevation is of rubbed bricks in dressing of Monk's Park freestone on the ground floor, the upper portion of the frontage being treated with stucco. The façade consists of a central gable and two side turrets, which are covered with green slates. The theatre is entered through four pairs of double glazed and panelled doors, the circle, with separate entrances, being reached by means of two spacious white marble staircases. The circle is supported by steel girders and cantilevers, the main girder weighing nine tons. The contractors were Messrs. Wilkins and Sons, of Bishop Street, Bristol.

Electric Theatre, Sydenham.

The illustrations on pages 69 and 70 show the new electric theatre which has been erected in Sydenham Road, Sydenham, London, S.E., from designs by Messrs. Parnacotts, of 93, York Road, Westminster Bridge. In this the architects have endeavoured to express the character of a small entertainment hall, and to further

the idea they have selected a Palladian motif for the entrance portico. The interior has been decorated in French grey and cream with dark dado, so that the natural dampness of the new work should not be conspicuous. Only a small slope in the floor could be attained, owing to the levels; this, however, could easily be removed, providing a level floor, when the building could be used for other purposes if found necessary. The hall accommodates about 450 persons, and is particularly easy to clear. It was opened in October last.



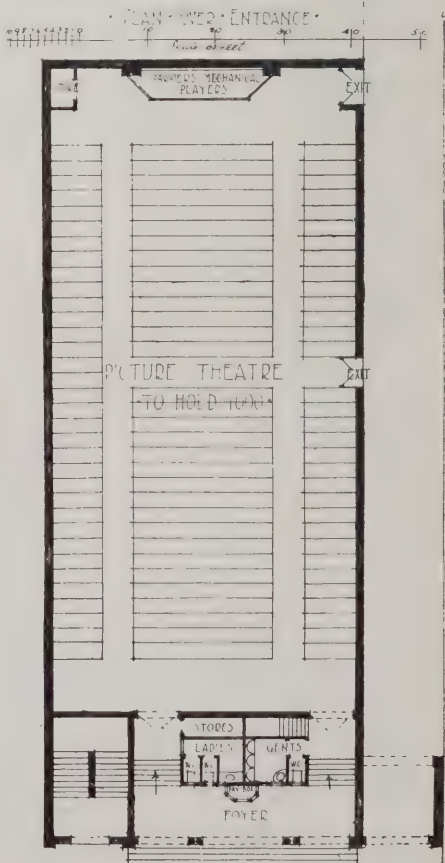
• GROUND FLOOR PLAN •

• SCALE OF FEET •



• UPPER FLOOR PLAN •

PROPOSED ELECTRIC THEATRE,
WESTMINSTER BRIDGE ROAD



• GROUND FLOOR PLAN •

PROPOSED HARPER ELECTRIC THEATRE,
HOLLOWAY ROAD, LONDON, N.

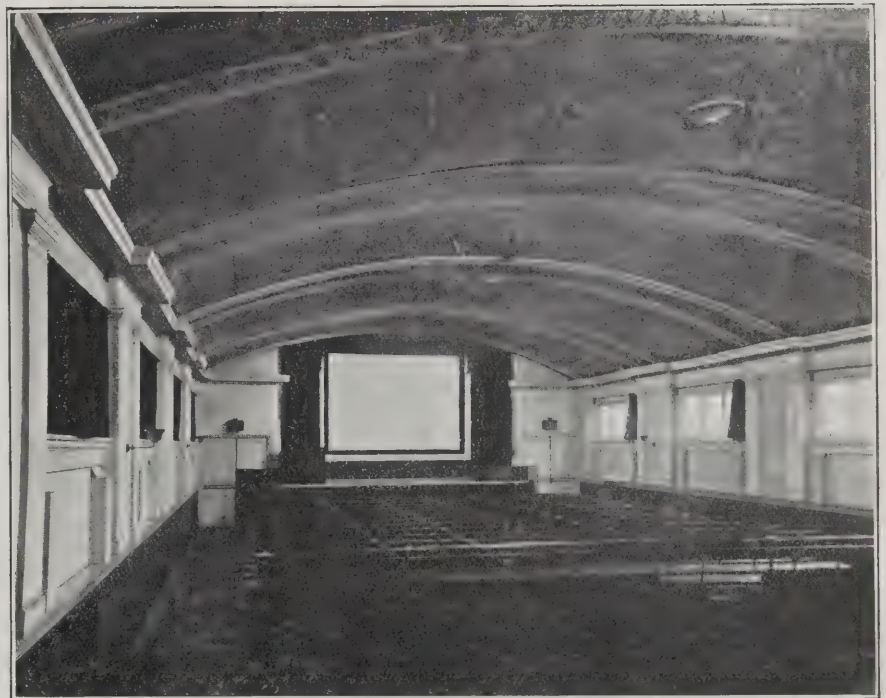
that, as is the case in a multitude of instances, he is unable to avail himself of the facilities afforded by the architectural schools? He is in no small danger of becoming derelict.

But, even though he may, by considerations of time, distance, and lack of funds, be shut out from the officially recognised technical or professional schools, his case is by no means hopeless. The International Correspondence College, for example, comes to his rescue. It will, for a small fee, provide him with a skilfully arranged course of instruction, which he can assimilate in his own home.

The set of text-books, or, as they are modestly styled, "instruction papers, with examination questions," pertaining to the I.C.S. course on Architecture having come into our hands, we must confess to considerable surprise at the pains taken in the production. The text-books are quite beautifully produced, being printed on art paper, and containing a very large number of first-class photo-process engravings, besides many highly effective coloured plates. Four of the books, which each contain from 150 to 170 pages, deal very clearly and concisely with the history of architecture; the subject being presented with remarkable point and precision. The origin of architecture having been tersely and quite usefully described, the characteristics of Egyptian architecture are enumerated and illustrated. The headings under the various sections may be quoted as showing the methodical plan of the book. They are: Influences (geographical, geological, climatic, religious, political, and historical); characteristics; examples; analytical study (plans, walls, roofs, columns, openings, mouldings, ornament, etc., forming subsidiary headings). The examples from Greece are, of course, the Parthenon, the Erechtheum, the Temples of Artemis and of Nike Apteros, the Propylæa, the Choric Monument of Lysicrates, the Tower of the Winds, and the tombs and theatres; those from Roman architecture are the fora, temples, basilicas, baths, theatres and amphitheatres, triumphal arches, columns of victory, tombs, aqueducts and bridges, and palaces. At the end of each part there is a list of examination questions, enabling the student to test the extent to which he has mastered the facts that have been set before him in such orderly, definite, and intelligible form that they cannot possibly be misapprehended. It is a common fault of text-books that the student is compelled to "dig out" his facts, and, as often as not, he is an unskilled excavator, and can never feel certain that he has got them all, and got them right. Here, however, the laborious and not altogether profitable operation is carefully performed on the student's behalf; the essential facts, completely ascertained and shorn of all superfluity, are made visible and tangible, so that the student is spared much waste of effort, and much harassing uncertainty.

Masonry, beams and plate girders, stair building, etc., are dealt with in separate treatises in the same direct and methodical style, not a word being wasted, and all the essential points being brought into high relief with admirable skill. The mastery of such books, supplemented by the careful revision of the student's papers by expert members of the I.C.S. staff, should prove invaluable not only to the youthful student, but to the practising architect who feels that his knowledge on such points is growing somewhat rusty.

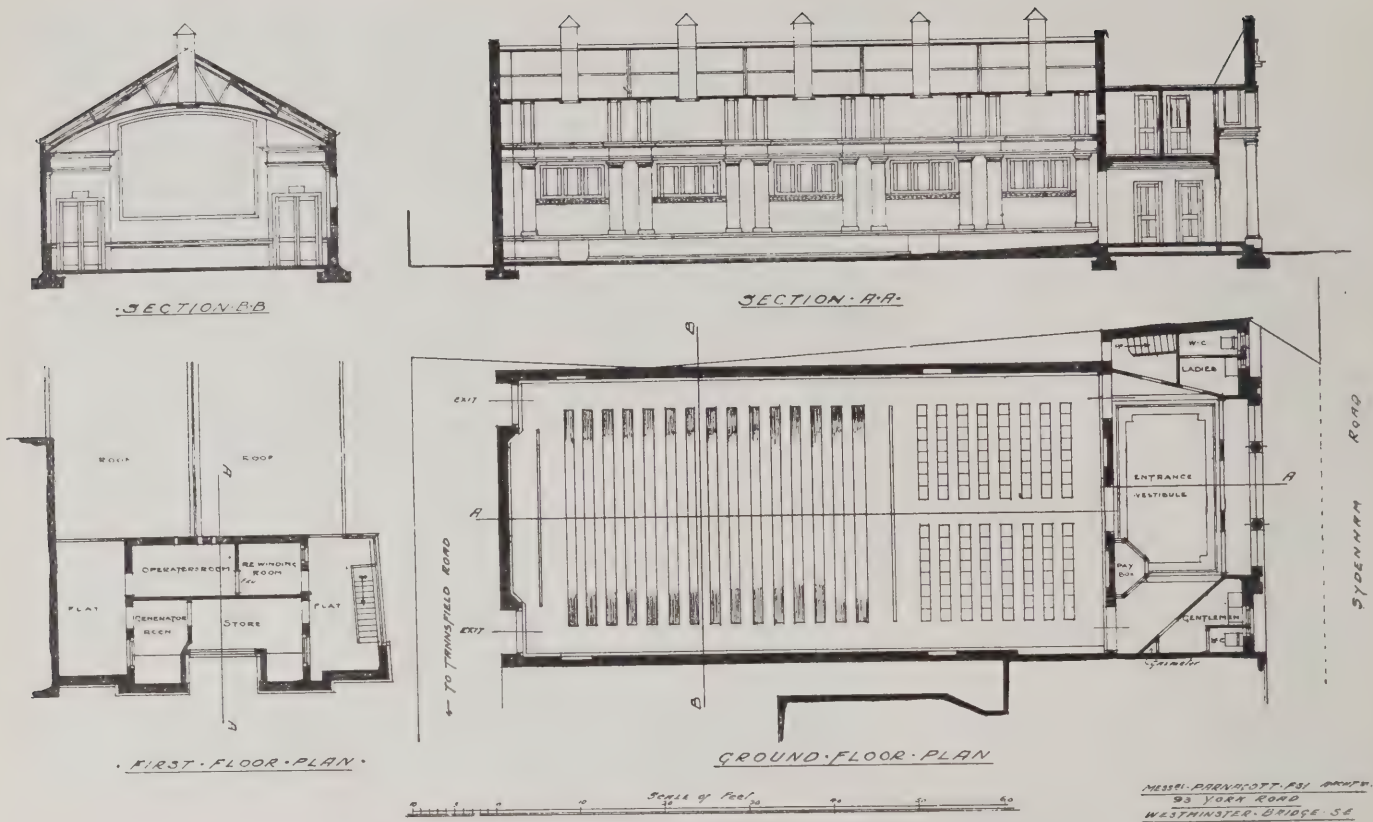
But it may be asked, Why cannot the intelligent student do all this for himself?



ELECTRIC CINEMA THEATRE, SYDENHAM, LONDON, SE. PARNACOTTS, ARCHITECTS.

In the first place, notwithstanding his intelligence, he would need guidance as to the choice of text-books; and when he had got them he would need still more careful guidance in the choice of what to remember and what to forget of their often very confusing contents. Then, by studying "on his own," he would lack most of the stimulus which is recognised as a vitalising and an essential element in education. A correspondence college like the I.C.S. supplies stimulus in several forms: (1) The student feels in sympathy, if not in competition, with a number of others who are doing the same sort of thing; (2) he feels that his progress is being

watched; and (3) sordidly, but sensibly enough, he feels that he owes it to himself to get back the value of his money. Also, he feels bound (as he would not feel if he were merely his own taskmaster) to apply himself at a regular hour to a given task, and so, instead of dropping the subject at an early stage, as a solitary and unattached student is deadly apt to do, he perseveres until he gets through. This does not exhaust the advantages of the I.C.S. system, which embraces many interesting forms of educational and social activity. The subjects, indeed, make a long list, in which the architect who may perhaps disdain to take lessons in his own



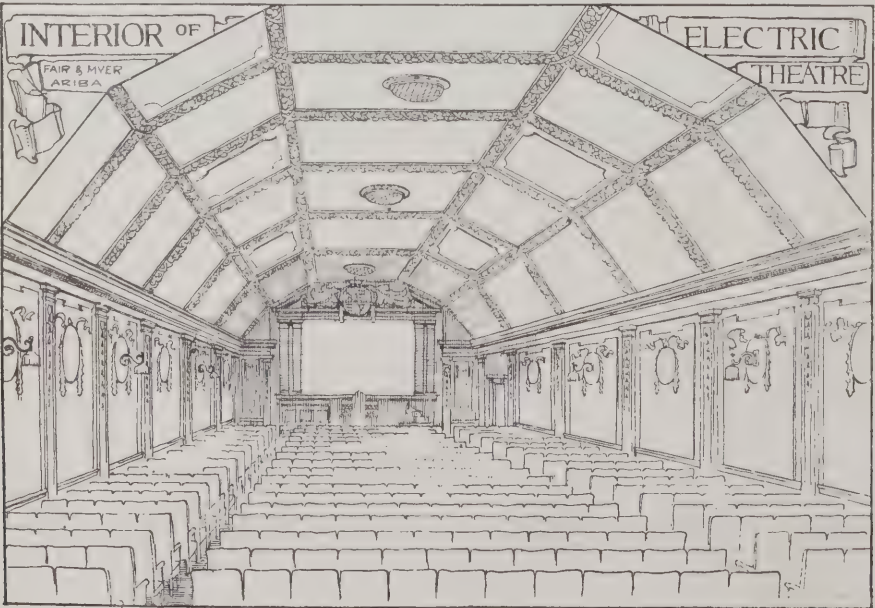
ELECTRIC CINEMA THEATRE, SYDENHAM.

profession, may nevertheless feel less fastidious with respect to kindred or subsidiary subjects, like electric lighting and wiring, surveying, and quantity surveying; or he may, on glancing down the list, be struck with the idea that he would be none the worse for a little coaching in commercial training or book keeping, or building construction, or concrete engineering, or that he would like to add to his stock of knowledge one or more of the languages in which, as in the many technological subjects in the list, the I.C.S. is in a position to offer efficient coaching. The address of the International Correspondence Schools, Ltd., is International Buildings, Kingsway, London, W.C.

An ingeniously elaborated system is in operation for keeping accurate record of each scholar's progress, and every paper received is carefully examined by an expert, its defects (if any) being fully corrected and explained, and general comment and advice attached to the return letter. Important posts which are from time to time available are filled at the discretion of the examiners, who keep their eye on the work of likely candidates, and are, we hear, most careful not to put the round man in the square hole. The I.C.S., therefore, is a kind of clearing-house for talent, and besides its purely educational functions, fulfils the purposes of an efficient employment bureau.

THE ROOF OF NEW STREET STATION, BIRMINGHAM.

At last week's meeting of the Institution of Civil Engineers, a paper was read on "The Strengthening of the Roof of New Street Station, Birmingham," by Mr. Wm. Dawson, M.I.C.E. The roof of this station, erected in 1852-3, is the prototype of the one formerly existing over Charing Cross Station, and is of the bowstring girder type, of 212 ft. span. Having regard to the results of the Board of Trade inquiry into the failure of one of the tie-rods of Charing Cross roof, it was deemed advisable, as a precautionary measure, to fix auxiliary tie-bars to the principals, especially as they were of somewhat lighter construction than accorded with modern practice. The tensile stress in the main tie-rod due to dead load, painters' scaffolding, and a horizontal wind-pressure of 40 lbs. per sq. ft., was 6.93 tons per sq. in., whilst the corresponding stress in the arched rib was 3.07 tons per sq. in., and it was therefore considered that the former alone need be strengthened. Auxiliary tie-bars were accordingly fixed to each principal, by means of scaffolding suspended directly from the arched ribs of the principals by wire ropes, so as to avoid all interference with the traffic on the lines or platforms below. This scaffolding was moved forward from principal to principal as the work proceeded, without being lowered to the platforms. In order to avoid placing additional stress on the existing tie-rods owing to the weight of the scaffolding, temporary steel hawsers were secured to the feet of the principals and stressed to an amount which counteracted the effect on the tie-rod of the weight of the scaffolding. The auxiliary tie-bars were formed of



two 6 in. by $\frac{3}{4}$ in. steel bars placed on edge, and in order that a certain definite amount of relief might be given to the existing tie-rods, an initial stress was put in the auxiliary tie-bars, and accurately measured by means of calibrated springs. While this work was in progress the principal was lifted and suspended clear of its bearings by means of a derrick, so that the full tensile stress might be developed in the tie-bars, and not be partly absorbed in tending to draw over the head of the column on which the principal rested. The new tie-bars were secured to the existing principals by means of $2\frac{3}{4}$ in. diameter pins, which passed through the shoe of the roof principals.

At last week's meeting of the Institution Mr. Dawson also read a paper on

*The Reconstruction of Arpley Bridge,
Warrington.*

The London and North-Western Railway Co.'s line over which the heavy traffic passes between Liverpool, Garston, and Manchester and Yorkshire districts, crosses the River Mersey at Warrington by a girder bridge of 180 ft. span, erected in 1853 from designs by the late Mr. John Lister. The bridge formerly consisted of three main girders with a suspended timber floor to which the permanent way was directly attached, and as the working of

the goods-traffic necessitated the use of a heavier class of engine than had hitherto been employed, it became necessary to strengthen the bridge, and at the same time to widen it, so as to provide the clearance between the girders required by the minimum construction gauge. Various schemes for this purpose were considered, bearing in mind the necessity of maintaining the railway traffic across the bridge, and avoiding interference with navigation below. It was ultimately decided to substitute new girders for the existing face girders, and, by means of overhead girders connected with the top booms of the new girders, to transfer to the latter a portion of the load that would otherwise be carried by the centre girder, which was already overloaded. A new steel floor was also to be provided.

The method of carrying out the work at site is perhaps the most interesting feature. This was accomplished by first closing one of the lines over the bridge, and erecting the new face girder on the existing floor, all traffic being meanwhile worked over the other line. After the first girder had been completed, the portion of the floor on which it was built was cut away, and the old face girder was removed in the following manner:—One end was placed upon a trolley, and barges, on which a suitable stage had been built,

were floated underneath the other end at low water. The rising tide lifted this end off its bearings, and it was then pulled on to the opposite abutment by a locomotive running on the ordinary line of rails. The new face girder was next placed in its final position, and the first half of the new steel floor was fixed, after which the permanent way was restored and all traffic was diverted over the strengthened portion of the bridge. The other half of the bridge was dealt with similarly. When this work had been completed, steps were taken to relieve the old centre girder permanently of such an amount of load as would ensure that under no conditions of traffic would the stress in the bottom flange exceed 5 tons per square inch.

HOUSE AT WESTCLIFF.

A feature of the plan of this house (reproduced on the next page) is the entrance hall, from which the various rooms open. The house is built for a doctor, and the entrance to the surgery is arranged on the west side, with waiting-room adjacent. The plan upstairs works out economically, there being no passages, as the bedrooms are entered from the landing. For the exterior, red bricks have been used for facings, with rubbers for dressings. The builders were Messrs. Cross and Sons, of Hutton, Essex.



HOUSE AT WESTCLIFF-ON-SEA. WALTER J. TAPPER, ARCHITECT.

NEWS ITEMS.

Alterations to Rochdale Town Hall.

The Rochdale Town Council have agreed to spend £3,000 on internal alterations to the Town Hall.

Masonic Temple, Aberdeen.

In Crown Street, Aberdeen, a new Masonic temple has just been completed from designs by Mr. Harbourne MacLennan, architect, of Aberdeen. It has cost £10,000.

New General Post Office, Sheffield.

The leaded glass for the whole of the principal front windows of this building (described and illustrated in our Edition de Luxe) was supplied by Messrs. Walter J. Pearce, Ltd., of 41, Gartside Street, and Hardman Street, Manchester.

A Big Claim for Extras.

The Housing Committee of the Swansea Corporation has under consideration a big claim for extras under one of its housing contracts. It is understood that while the contract is for £19,760, extras are claimed by the contractors which already bring the total up to £24,400.

Rebuilding of Wimbledon Hospital.

The Committee of Management of the Wimbledon Hospital has decided to rebuild the institution. The first part of the new building to be erected will consist of the administrative block and two wings, and in one of the latter will be situated the "King Edward the VII. Ward" as a memorial to the late King. Another memorial ward will be the "Collyns Ward," in commemoration of Dr. Poole-

Collyns, the first medical officer of the hospital, who died a few years ago. In order to complete the new hospital free of debt an appeal is being made for £3,000.

New Reservoir for Birkenhead.

The contract for a new reservoir to be constructed for the Corporation of Birkenhead has been allotted to Messrs. Robert M'Alpine and Sons, Glasgow. The reservoir is to be situated at Corwen in North Wales, and will have a masonry dam. The cost is estimated at £180,000.

Cement-making Plants.

The manufacture of complete cement-making plants, with rotary kilns and other modern apparatus, is now being taken up by Messrs. Edgar Allen and Co. (Ltd.), of Tinsley, who manufacture the plant, erect it, and work it with their own staff before completing delivery. In addition, they advise as to the suitability of materials for cement making.

New Books.

In the list of books to be published by Messrs. Macmillan between now and Easter are new editions of the firm's guides to Italy and Sicily (revised by Dr. Thomas Ashby, Director of the British School at Rome), Palestine and Syria, and Greece, and an historical essay on "Hellenistic Greece," by Professor Ferguson, of Harvard University.

New Art Purchases.

The Corporation of Liverpool has acquired for its permanent collection the large statuette of "An Athlete struggling with a Python," by the late Lord Leighton, P.R.A., published by Messrs. Ernest Brown and Phillips, of the Leicester Gal-

leries, London, and recently lent by them to the autumn exhibition at the Walker Art Gallery. A painting in tempera of "The Meeting of the Virgin and St. Anne," by Mr. R. Anning Bell, R.W.S., has been purchased by the Corporation of Manchester from the exhibition of this artist's works held last month at the Leicester Galleries.

Seward v. the Cardiff Corporation.

The hearing of the action in which Mr. Edwin Seward, F.R.I.B.A., seeks to recover £10,000 from the Cardiff Corporation for services rendered, damages, etc., with respect to the proposed Welsh National Museum and Library at Cardiff, was resumed last week before the Official Referee, Mr. Muir Mackenzie. Counsel on both sides having been heard, the Official Referee reserved his judgment.

Liverpool Cathedral.

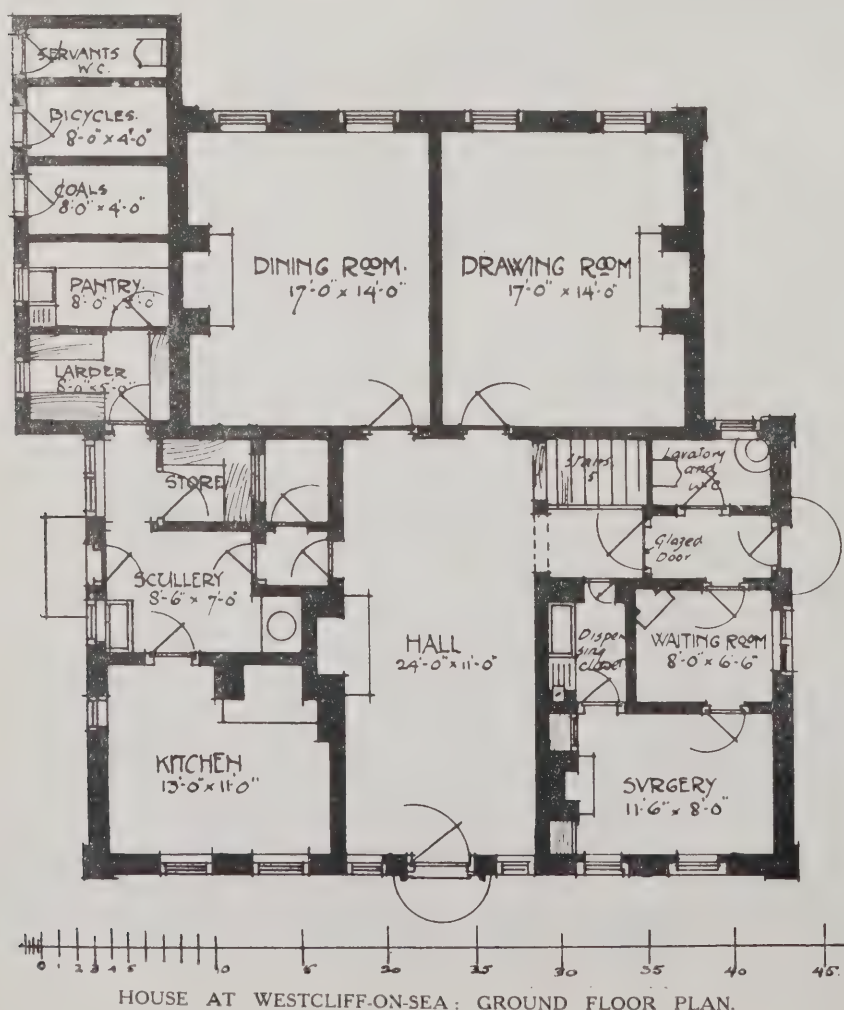
The Liverpool Architectural Society have resolved to invite Mr. Gilbert Scott, architect of Liverpool Cathedral, to read a paper before their members in detailed explanation of his variation of the design of the building. It is considered to be of much interest to know (1) how Mr. Scott intends to utilise the existing foundations for the twin towers originally proposed; and (2) how he will treat the suggested central oblong space beneath the single tower.

Sir William Richmond on Post-Impressionism.

In the first of four lectures on Painting which he is delivering at the Royal Academy, Sir William Richmond said he saw no likelihood of another Renaissance in Post-Impressionism—from which might God preserve them—but he saw a union in the future between Pre-Raphaelism and Impressionism. This was coming nearer—he meant among serious artists, not fad-mongers. With it would come a more literary and intellectual art, which would not provide less but more pleasure, which would have more to say, and would possibly say it better. He had no fear of a repetition of the follies of Post-Impressionism by English artists. English people must, indeed, change and obliterate their finer characteristics before such an incapable reaction—except for notoriety—could find serious followers.

A 'Structure' Under the Building Act.

For erecting an ornamental canopy to their premises in New Oxford Street, without the written consent of the London County Council, Messrs. A. and F. Pears, Ltd., were recently summoned at Bow Street, when an order was made for the removal of the structure, and a penalty of 20s. imposed on each summons, with ten guineas costs. Messrs. Pears claimed that the structure, which was 18ft. long, 2ft. deep, and projected 4ft. 6ins., did not come within the Building Act. The magistrate (Mr. Curtis Bennett) consented to state a case for the High Court. Under the London Building Act of 1894 the Council have power to control and regulate any fixed erection projecting beyond the building line in the streets under their control. They are now seeking similar powers in respect to such projections which are not fixed but movable, such as pulleys, cranes, leading, flaps, awnings, screens, blinds, lamps, daylight reflectors, clocks, and advertisement devices.



DOMESTIC ARCHITECTURE OF THE EIGHTEENTH CENTURY.

BY J. ALFRED GOTCH, F.S.A., F.R.I.B.A.

In his eighth and concluding lecture at University College, London, Mr. Gotch dealt with the general characteristics, the faults and the merits, of the architecture of the eighteenth century, which was pre-eminently the age of the "distinguished amateur," and the age of "taste," true and false.

THE eighteenth century saw the final development of that great movement in architecture which, in England, began in the early years of the sixteenth. As we have already seen, it was in the reign of Henry VIII. that the influence of Italy first made itself felt in English architecture; and that influence gradually increased during the reigns of his successors, until, under the two Charleses and in the hands of Inigo Jones and Sir Christopher Wren, the Italian manner triumphed over the last remains of our native traditional methods of design. It was largely a victory of the text-book over the workshop.

Text-book v. Workshop.

Gradually the architect with his text-book took the place in design which was formerly occupied by the workman with his traditions. This change had its advantages and its disadvantages. One of the disadvantages had become very marked by the beginning of the eighteenth century, and that was the divorce of architectural design, not only from architectural construction, but to a large extent from practical considerations of convenience.

So much had the taste for classic architecture grown, that to the eighteenth century architecture was little more than the Five Orders. Gothic architecture was wholly misunderstood; it was despised, and regarded as barbarous. The "Gothic Order," as they called it, was described by a writer of the time as "The Folly and very Ape of Architecture." Such an attitude of mind is hardly intelligible to us who recognise Gothic architecture as perhaps the most logical and daring form of construction that man has yet employed. It is hardly less difficult to understand how men of that time can have failed to be impressed with the majestic solemnity of a great Gothic cathedral; and yet they did fail—even such cultivated men as Evelyn and Addison.

John Evelyn's Views of Architecture.

The phrase about the "very Ape of Architecture" occurs in a treatise by a lively Frenchman, M. Freart, and, considering the subject, a very entertaining treatise it is. But Evelyn's views were those of a sagacious unimpassioned Englishman, and are worth quoting at some length as illustrating the standpoint from which the late seventeenth and early eighteenth centuries looked at the subject. In treating of architecture, he says:—"It is the ancient Greek and Roman architecture only which is here intended, as most entirely answering all those perfections required in a faultless and accomplished building; such as for so many ages were so renowned and reputed, by the universal suffrages of the civilised world, and would doubtless have still subsisted, had not the Goths, Vandals, and other barbarous nations subverted and demolished them, introducing in their stead a certain fantastical and licentious manner of building, which we have since called 'modern' (or Gothic rather), congestions of heavy, dark, melancholy and monkish piles, without any just propor-

tion, use or beauty, compared with the truly ancient. So that when we meet with the greatest industry and expensive carving, full of fret and lamentable imagery; sparing neither of pains nor cost; a judicious spectator is rather distracted and quite confounded than touched with that admiration which results from the true and just symmetric, regular proportion, union and disposition; the great and noble manner, which those august and glorious fabrics of the ancients still produce.

"It was after the irruption and swarms of those truculent people from the north, when instead of those Beautiful Orders they set up those slender and misqu Shore pillars, or rather bundles of staves and other incongruous props, to support incumbent weights, and pondrous arched roofs, without entablature; and though not without great industry nor altogether naked of gaudy sculpture, trite and busy carvings; 'tis such as rather gluts the eye, than gratifies and pleases it with any reasonable satisfaction.

"For proof of this (without travelling far abroad), I dare report myself to any man of judgment, and that has the least taste of order and magnificence; if after he has looked awhile upon King Henry the VIth's Chapel at Westminster; gazed on its sharp angles, jetties, narrow lights, lame statues, lace, and other cut-work and crinkle-crinkle; and shall then turn his eyes on the Banqueting House built at Whitehall by Inigo Jones after the ancient manner; or on what his Majesty's present surveyor, Sir Christopher Wren, has lately advanced at St. Paul's, and compare them judiciously without partiality and prejudice, and then pronounce which of the two manners strikes the understanding as well as the eye, with the more majesty and solemn greatness. In this sort have they, and their followers ever since filled, not all Europe alone, but Asia and Africa besides, with mountains of stone, vast and gigantic buildings indeed; but not worthy the name of Architecture. Witness what are yet standing at Westminster, Canterbury, Salisbury, Peterboro', Ely, Wells, Beverley, Lincoln, Gloucester, York, Durham, and most cathedrals and minsters."

Addison's Heresy.

Thus far Evelyn. That Addison had no clearer insight into the nature of architecture will be seen from the 415th "Spectator," where he says:—"Let any one reflect on the disposition of mind he finds in himself, at his first entrance into the Pantheon at Rome, and how the imagination is filled with something great and amazing; and at the same time, consider how little, in proportion, he is affected with the inside of a Gothic cathedral, though it be five times larger than the other; which can arise from nothing else but the greatness of the manner in the one, and the meanness in the other."

The Art of Building Finely.

The fact is that architecture was misunderstood by the writers and designers of the period. In their view it dealt almost exclusively with pictorial effect.

Planning to them meant first and foremost the arrangement of a building in regard to its appearance, not in regard to the functions it had to fulfil. Broadly speaking, a well-designed building is as much a product of evolution as natural scenery or the forms of plants and animals. Natural scenery is almost entirely governed by the geological formation of the district. Plants and animals have assumed their various forms chiefly as the result of the necessities of their growth, which again are dictated by the functions they have to fulfil. And so it is—or ought to be—with a building. Architecture is not only the art of building finely, it is the art of building finely in order to comply with certain specific conditions.

The notion of architecture does not seem to have occurred to the eighteenth century, and so the chief aim of its architects (at any rate in the larger houses) was to dazzle and impress the spectator, rather than to please and satisfy the indweller. Lord Chesterfield told General Wade, for whom the Earl of Burlington had designed an inconvenient though handsome house in Burlington Street, "if he could not live in it to his ease, he had better take a house over against it and look at it"; a piece of advice by which many a nobleman might have profited.

A Matter of Rule and Compass.

The continued cultivation of the Italian manner for nearly two centuries, the increasing importance attached to the rules of proportion which governed so many of the buildings of Italy, both ancient and modern, resulted in making architectural design largely a matter of rule and compass. Macaulay has observed that during the latter part of the seventeenth century and the early part of the eighteenth the heroic couplet was so much in vogue and was brought to such perfection by constant use, that every poetaster could employ it with as much facility as Pope himself. It was much the same in architecture. The rules were so well known that it required no particular aptitude to apply them. Skilful planning with a view to meet definite needs was not expected, and the result was a tendency towards a monotony of treatment in strong contrast with the vivacious individualism of a century earlier. Just as in poetry it is not the polished form of the verses that marks the true poet, but the ideas contained in them; so in architecture it is not the correct marshalling of columns, and the "nice conduct" of entablatures that must be our criterion, but the manner in which the whole building satisfies and expresses the wants which it is expected to supply. Judged by this standard, how many of the designs in Campbell's "Vitruvius Britannicus" would come within the category of true architecture? And yet those volumes contain nearly all the larger houses built in the first half of the eighteenth century.

Eighteenth Century Art.

It must be borne in mind that in matters of art, the eighteenth century was very artificial. An essayist of the time, writing in 1739 describes how he went to bid farewell to a friend who was about to embark for the war in Flanders, and who, in view of eventualities, had caused his portrait to be painted. The writer extols the painting as a masterpiece of design and execution. The warrior himself was represented in the guise of Hector, his wife as Andromache, and his little boy in the arms of an

aunt as the infant Astyanax carried by his nurse. "I could wish," he says, "it was to become a general fashion to have all pictures of the same kind executed in some such manner."

The Theatrical Style, and Tobiah Jenkyn, Esq.

This theatrical treatment in painting had its counterpart in architecture. Campbell introduces one of the designs in his "Vitruvius Britannicus" thus: "This design of my invention in the Theatrical Style is most humbly dedicated to Tobiah Jenkyn, Esq." The Theatrical Style, he tells us, "admits of more gaiety than is proper either for the Temple or Palatial Style." The large houses of the period were all more or less theatrical; that is, they were designed with a view to impress the beholder, rather than to provide a comfortable home; just as in somewhat later years the laying-out of gardens and grounds was contrived with the aim of producing the effects found in the pictures of Claude Lorraine and other landscape painters, down even to the introduction of artificial ruins. Shenstone says, "I think the landscape painter is the gardener's best designer."

In describing the plan of his house in the theatrical style dedicated to Tobiah Jenkyn, Esq., Campbell dwells not on the convenience of arrangement, not on the cheerful aspect of the rooms or any special contrivance for the comfort of the inhabitants, or whatever goes to make a house a home, but on the proportions of his principal apartments. "Here," says he, "is the double and single cube, the Hall being 27 by 54. Here is 18 by 27, which is the *sesqui altera*, and 21 by 27, the *sesqui tertia*, and you pass gradually from the larger to the lesser"; all of which may have satisfied the wants and aspirations of Tobiah Jenkyn, Esq., but would not compensate his descendants for the absence of those arrangements which make daily life tolerable.

Eighteenth Century Planning.

The needs of daily life went but a little way to model the great houses of that time. Architectural grouping, in order to impress the beholder, often led to dividing the mansion into separate blocks, one for the family rooms and state apartments, one for the kitchens and servants, and one for the stables. The kitchen, therefore, would be hundreds of feet off the dining-room, a drawback against which Sir Henry Wootton warned his readers; "or else," says he, "besides other inconveniences, perhaps some of the Dishes may straggle by the way." Sometimes the servants' quarters were located in two detached blocks hundreds of feet apart, balancing the composition of which the family rooms formed the centre, and joined to the latter by open colonnades. How the service of the house could be carried on with the two halves of the staff separated from each other by a five or ten minutes' walk is not very clear; but of course the mansions were not built for the servants, but a little for the family itself, more for its grand guests, and most for the casual spectator who was to admire the lordly pile as he passed by.

The servants, indeed, had to put up with what accommodation they could get. Their hall might be a vaulted underground room lighted only by areas, as at Buckland in Berkshire, and their bedroom windows might look out on to the back of the parapet. The butler might have to sleep in a room without any outside wall, and no direct light and air. But in those

days servants could hardly expect to be exempt from suffering for architectural effect, when their employers were content to suffer as well. And they *must* have suffered; for, wholly apart from considerations of bad service, the family were often located in a low basement with all the weight of the state apartments over their heads. Their rooms were not contrived to catch the morning sun, or to get a splendid view, or, indeed, for any particular purpose relating especially to them; but they were arranged to fill up the space beneath the great rooms of State, and if they were comfortable, it was more by good luck than by good management.

Amateur Architects.

The architects of those days were, in fact, many of them, amateurs, and the kind of architecture in demand was such as amateurs could supply. Pre-eminent among them—at any rate in social position—was the Earl of Burlington; and when we consider this fact for a moment, we need hardly be surprised at the amount of unreal and theatrical design that was produced. Who could expect an Earl to concern himself with the niceties of household planning? No wonder that General Wade received that advice from Lord Chesterfield to take a house over against his new mansion and look at it. Yet all through the century Lord Burlington was looked up to as the greatest patron of art that England has ever produced, and especially of architecture. Horace Walpole extols his taste and his ability. He "had

every quality of a genius and artist, except envy"; yet withal he cannot disguise from himself that Ripley, who was an architect by occupation, "in the mechanic part, and in the disposition of apartments and conveniences, was superior to the Earl himself."

Pope, of whom Lord Burlington was a patron, satirises Ripley more than once; but then Ripley did not belong to Pope's faction. Pope himself, in one of his epistles, points out a way in architecture which no one seems to have followed. Walpole has some remarks on the villa at Chiswick which are worth repeating. It is "a model of taste," he says, "though not without faults, some of which are occasioned by too strict adherence to rules and symmetry. Such are too many corresponding doors in spaces so contracted; chimnies between windows, and, which is worse, windows between chimnies; and vestibules, however beautiful, yet too little secured from the damps of this climate. The ground apartment is rather a diminutive catacomb, than a library in a Northern latitude." Then he adds a few sentences which throw some light on one of the motives that actuated the eighteenth century. "The larger court, dignified by picturesque cedars, and the classic scenery of the small court that unites the old and the new house, are more worth seeing than many fragments of ancient grandeur, which our travellers visit under all the dangers attendant on long voyages." The theatrical treatment is again perceptible



CANONS ASHBY: GARDEN DOOR.



MILTON: THE GARDEN FRONT.

in making a new English villa rival "the classic scenery" and the "fragments of ancient grandeur" which were to be found abroad.

When Architecture "Resumed Her Rights"!

It is from the opinions of men who lived in the eighteenth century that we can best gather the motives that underlay their actions, and therefore a further quotation from Walpole may be excused: "It was in this reign" (of George II.) he says, "that architecture resumed all her rights. Noble publications of Palladio, Jones, and the antique, recalled her to true principles and correct taste; she found men of genius to execute her rules, and patrons to countenance their labours. She found more, and what Rome could not boast, men of the first rank who contributed to embellish their country by buildings of their own design in the purest style of antique composition." We have seen one of these men of the first rank, Lord Burlington, and what he did. Another was Lord Pembroke, and he is worth singling out because, according to Walpole, "no man had a purer taste in building than Earl Henry, of which he gave a few specimens, besides his work at Wilton." Now his work at Wilton is not easy to assign, for the house is attributed largely to Inigo Jones, and the "theatric bridge," as Walpole calls it, to Morris. But at any rate this bridge is less objectionable than the other "theatric" work of the time, inasmuch as it imposes no special inconvenience on anyone; yet whether a bridge of this kind is in harmony with English scenery is a debatable question.

The extravagances of the second quarter of the eighteenth century sprang from an indulgence in "taste" apart from consideration of propriety, and it was Lord Burlington who led to them, partly by his own work and partly by his publication of the designs of Inigo Jones's and Palladio's antiquities of Rome. But it only wants a comparison of Inigo Jones's work with that of Burlington and his successors, or a comparison of Wren's with theirs, to see how these two men were really architects, while the others were amateurs occupied with what they did not thoroughly understand, and into the practical details of which they did not care to enter.

The Eighteenth Century Palace.

But while we cannot but feel that in the true essentials of architecture they were sadly lacking, there is no doubt that they

produced striking results. One of these fine palaces when it was surrounded by its original gardens, must have been remarkably imposing. Take Blenheim, for instance. If we regard it as a home, we must be disappointed, but as the dwelling of a great noble, living in state and surrounded with all its attendant ceremony, receiving other great nobles with their retinues and housing them in great magnificence—in these respects it has much to claim our commendation. There is much excuse for it in the fact that it was a gift from the nation to its greatest son; it had to be splendid at all costs; yet it

did not meet universal appreciation even in those days, as witness the lines of Swift:—

"Tis very fine,
But where d'ye sleep or where d'ye dine?
I find, by all you have been telling,
That 'tis a house, but not a dwelling."

Nevertheless, with all their drawbacks, these palaces were stately. The plans look gorgeous on paper, and so do the sections showing the internal decoration. The effect of the places themselves is, perhaps, rather depressing on the ordinary person, the grandeur is a little too obvious; there is no such feeling of homeliness as in the many-panelled rooms of the early seventeenth century; but when all is said, the fact remains that the architects of the later time had a very definite aim in what they did, and they achieved it.

Eighteenth Century Homes.

When we leave the mansions of the nobility and come down to the houses of the squire or the well-to-do merchant, we find ourselves in a much pleasanter atmosphere. They have a quiet dignity about them which is decidedly restful and attractive, especially those of the first quarter of the century. In later times, the portico idea became too prevalent, which consisted in affixing to the front of an otherwise plain house some variation of the columned front of an ancient temple. But the earlier houses, with wide corniced eaves, simple horizontal strings dividing the rows of sash windows, and combining with the quoins



DETAIL OF STAIRCASE WALL, COTTESBROOKE PARK.

that emphasise the angles—these will no doubt long continue to form the model for houses of similar use and capacity. It is just a question whether this is quite the type that suits the present age; for our wants seem to grow always more complex, and to require a more elastic style than one depending for its effect on strict symmetry and unbroken horizontal lines.

[Examples shown on the screen included, Foremark (Hiorns); Moot House, Down-ton, 1720; Honnington Hall, Warwickshire; Ball's Park, Newbury; Canon's Ashby.]

Dignified Interiors.

If we cannot take a wholly sympathetic view of the purely architectural work of the eighteenth century—at any rate in its more notable examples, which, like Somerset House, seem more suitable for public buildings—neither can we forget that we are indebted to it for much that is suggestive in matters of detail; in the joiner's work, in the plasterer's work, in the ironwork and the leadwork.

The formal and precise treatment of the plan often led either consciously or unconsciously to a dignified interior. Many a small house has a fine staircase, or a fine chimney-piece, and not infrequently a long corridor so embellished as to become less a dull passage than an interesting vista.

[Examples from Salisbury, Cottes-brooke, Epsom, Milton, etc.]

The Surroundings.

We cannot leave these eighteenth century houses without a brief glance at their surroundings. The early part of the century witnessed the finest efforts of the garden designer, achievements which its closing years were to see, in many instances, destroyed and even effaced.

We have previously seen, as at Hampton Court and Boughton, the beginning of this development. The same ideas were carried on during the first quarter of the eighteenth century. The same kind of fine lay out which characterises Boughton is to be seen on a smaller scale at Lowther and Althorp. Drayton, too, has fine formal gardens. The splendid ironwork at Drayton is rivalled, though hardly surpassed, by that at other large houses, as at Aldenham and Bowood. An orangery, as at Bowood, was a very common feature of large houses. Smaller houses were treated in the same fashion with terraces, flights of steps, and important gateways. Long vistas were continued with some striking object at their termination. At Canon's Ashby is a figure of a shepherd; at Melbourne a statue of Perseus.

Inspiration from the Eighteenth Century.

If we are to seek inspiration from the work of the eighteenth century, we shall find it in two directions—first, in the grand schemes of house and garden combined, and in the general grandeur of treatment bestowed upon the great houses of the time. Not that we are to copy either blindly; but it is very desirable to realise how much the house and its surroundings depend upon each other, and equally desirable to learn how a grandeur of manner may be acquired. Secondly, in the sober and simple houses where the plainness of the general appearance is sometimes unexpectedly broken by the quaint treatment of a door or chimney, and where the joiner's work is full of homely lessons.

It is often from the vernacular architecture of the century that we can get the most useful hints; whereas it is the palatial architecture that gives its stamp to

the period, and goes to furnish the textbooks. The one is for show first, and use second; the other is for use first, and show second. The palatial architecture of the eighteenth century was surely given to us more as a warning than as an example; but it is worthy of attention, just as all phases of architecture are which have acquired any hold on public affection; and we are not likely, in view of our present methods of study, to fall into that attitude of mind towards any style which Evelyn exhibited towards Gothic.

In concluding this final lecture of the series, Mr. Gotch said: To those who approach the subject for practical purposes I would say—Study the past not with a view to mere imitation, but in order to see how its problems were solved. Grasp the details of the problems of to-day, and your knowledge of the past will help you to solve them in a manner suitable to the present. Don't be too original, and you will find that you also are helping forward that great process of evolution which underlies the long series of houses which we have been studying together.

PICTURE EXHIBITIONS.

The Leicester Gallery.

At this Gallery there is a miscellaneous collection of water-colours which is of some interest, as it enables us to compare the styles of different periods and schools, seen in juxtaposition. We have examples of David Cox, De Wint, and Malton, among the older school; George Fripp and Thomas Collier; and we are inclined to wonder why G. Fripp, with his deficiency of any fixed style or aim, was placed so high at one time; and we can recognise that Collier, who belonged to the David Cox school, went beyond his model. Weedon, too, asserts himself in one or two drawings as nearly the equal of Collier occasionally, in the same style. There are some examples of artists nearly forgotten now. W. Bennett, in two drawings of wooded scenery, appears as a very capable landscape artist of a secondary order; but a small drawing of "A Coast Scene" (No. 70) is of higher quality, and as a treatment of sea is remarkably modern in effect. By Allason (now a quite forgotten name) there is a careful, hard, and precise drawing of Milan Cathedral which is meritorious of its kind; the figures, evidently by another hand, are traditionally said to have been put in by Turner. Among modern works are some architectural subjects by Mr. Ernest George, an admirable view in Venice by the late W. W. Deane, and a coast landscape by Mr. Henry Fulwood, "The Little Harbour," which is quite excellent in style and composition.

In another room in the same Gallery is a collection of water-colour landscapes by Mr. Robert Little, not all of them in his best style, but including some very fine things, notably, "Siena—Early Morning"; "Faslane, Gareloch"; and "Golden Cap, Lyme Regis," the latter a remarkable work both in style and composition. All these are among the larger works. In general Mr. Little's power is especially shown in giving an effect of grandeur of style to small drawings, so that they give the effect of large paintings reduced in scale; in the present collection this is hardly so much illustrated as usual.

The Fine Art Society.

Mr. Arthur Garratt's "Pictures of Eton" (oils) are treated in a fine broad style, and

one at least, "Sheep Bridge," is a landscape of high merit; the pictures of portions of the older buildings, interiors and exteriors, are interesting, but landscape is his best point. Miss Rosa Wallis's water-colours of "Flower-time in Highlands and Lowlands," belong to a higher class of work, and are beautiful throughout, more especially the pictures of the flowering meadows and hill-sides of the Tyrol.

The Goupil Gallery.

At this Gallery the Senefelder Club, the object of which is to promote the practice of the art of lithographic reproduction invented by Senefelder, is holding its second exhibition, which affords a useful and instructive illustration of the various effects which can be got by lithography; and also, in some cases, we regret to see, of the misuse that can be made of it to give emphasis to coarse and grotesque inventions; but that is the taste of the day. The value of lithographic drawing as a medium of expression lies mainly in the broad touch and the massing of lights and shadows which can be obtained from the lithographic chalk on the roughened surface of the stone; pen-line drawing on the polished stone, though it used often to be employed in the last generation, is rather a throwing away of the best qualities of the process, and is better produced now by photolithography from a pen drawing on ordinary paper. Lithographic chalk-drawing on the roughened stone has its own effects and capabilities, with a result quite different from anything obtained by photolithography. It was at one time used for a great deal of bad mechanical drawing by men who were mere draughtsmen and not artists, and who made a mere trade of it; but in the hands of an artist it is capable of a variety of fine and powerful effects, as this exhibition testifies. The short description attached to the catalogue omits the most important factor in the process of printing. The lithographic stone has an affinity for grease; the drawing is made on it with a greasy compound, called "lithographic chalk," which is absorbed by the stone; the stone being wet, the antagonism between grease and water acts so that when the roller with lithographic ink is passed over it, the ink is only taken up by the parts of the stones already drawn on. The drawing on the stone has to be made reversed, of course; but a "transfer paper" has been invented on which the drawing can be made without reversing, and then transferred to the stone by pressure. The value of transfer paper is not so much in avoiding reversing as in getting rid of the inconvenience of dealing with a thick and exceedingly heavy block of stone.

In the same gallery is a collection of the paintings of the late Miss Sarah Dodson, an American lady who studied under French teachers, and exhibited at the Salon and elsewhere. Her long design for a frieze of small figures, "La Danse," is clever and well worked out; there is also in the end room a very charming decorative design of nude figures under the title "Les Etoiles du Matin." The rest of her works, though all up to a certain standard of execution, can hardly be said to be of special interest.

The Carfax Gallery.

At this Gallery there is a collection of drawings by Mr. Walter Sickert, among which a clever small sketch of himself painting, and an etching of Dieppe, are the only two for which we can feel the slightest admiration. The remainder consist of rough and crude sketches mostly of figures.

YEAR BOOKS, DIARIES, AND CALENDARS.

"The Master Builders' Handbook, 1911," is the official year-book of the London Master Builders' Association in a new and improved form. Besides a full list of the names and addresses of members of the London Master Builders' Association, there is a condensed history of the Association, leading legal decisions affecting the building trade are concisely summarised, the most recent amendment to the London Building Acts is included, the text of various working rule agreements with the operatives is given, the London Labour Exchanges are listed, and there are many other valuable and interesting features, several of which are now first introduced. The binding and general appearance of the volume have been greatly improved, and copious indexes render it very convenient for reference. The book is now published by Technical Journals, Ltd., Caxton House, Westminster.

"Who's Who" for 1911 is, as usual, bigger than its immediate predecessor, although we do not observe that its bulk is greatly swelled now, or at any time, by the inclusion of an inordinate number of architects. The omission of some notable names in the profession is no doubt due to the shrinking modesty of the architects themselves, since the collection certainly does not err on the side of exclusiveness. The editors, in fact, seem to be altogether too tolerant. It is a delicate matter to suggest that many of the subjects would not be greatly missed if they were left out; but there need be no compunction in point-

ing out that many of the entries could be drastically and advantageously abridged, as, for instance, in the case of the long strings of unimportant works by unimportant authors, or of insignificant appointments held by petty officials. The work as a whole, however, is as useful as it is interesting, and is, in fact, an indispensable work of reference, remarkable alike for its fulness and its accuracy. It is published by Messrs. A. and C. Black, Soho Square.—From the same publishers we have received the extremely useful

"Writers' and Artists' Year Book: A Directory for Writers, Artists, and Photographers, 1911," which, published at 1s. net, is undoubtedly a real boon to those in whose interests it is issued. The particulars with regard to this Journal, however, seem to have escaped revision.

The "Brick and Pottery Trades Diary" presents an ample page (about 8½ins. by 12ins.); the diary, containing three days to a page, and being ruled with six columns for cash, and interleaved with blotting-paper, is preceded by many pages of

HOUSES AT COLWYN BAY



PAIR OF HOUSES AT COLWYN BAY, NORTH WALES. E. H. WOODCOCK, A.R.I.B.A., ARCHITECT.

These houses are built of local bricks, part of the upper storey being rough cast. The roofs are covered with local tiles. There are three entertaining rooms on the ground floor and six bedrooms on the first floor. Special attention was given to the plan in order that there should be no necessity to go out of doors to any of the offices. Internally the houses have been finished in a plain manner, the woodwork being either painted white or stained brown.

information with respect to the interests indicated by the title. The publishers are Maclaren and Sons, Ltd., 37 and 38, Shoe Lane, E.C.

The "Sanitary Record Year Book and Diary" is the twenty-ninth annual issue. The diary is interleaved with blotting-paper, and the memoranda will be found full and useful within their range. The price is 2s. 6d. net, and the publishing office is at 5, Fetter Lane, E.C.—The "Mechanical World Electrical Pocket Book" (6d.: Emmott and Co., Ltd., 65, King's Street, Manchester, and 20, Bedford Street, Strand) contains a large collection of data for mechanical engineers, includes a small diary, and is altogether a marvel for the money. It is in its twenty-fourth year of issue, and is bigger than last year's issue by the addition of thirty-two pages.

Office wall and desk calendars have been received from the Western Electric Co., Ltd., Norfolk House, Victoria Embankment; Equity Life Assurance Society, 18, Lincoln's Inn Fields, W.C.; Poulton and Son, boiler-setting engineers, Reading; the Woudham Cement Co., Ltd., 35, Great St. Helens, E.C. (measuring, by the way, 14ins. by 9½ins., on a mount that is some 5½ins. taller, while the date is in red letters 9ins high; rather overwhelming for an ordinary office, but a capital thing for workshop or warehouse); and William Morris and Co., Ltd., Ruskin House, Rochester Row, Westminster. — The "Minerva Diary and Note Book for 1911" is presented with the compliments of Pinchin, Johnson and Co., Ltd., Minerva House, Bevis Marks, makers of paints, enamels, varnishes, stains, etc., who inform us that they will be pleased to send a copy on request from any bona fide builder or decorator (and we presume also from any architect), provided that a trade or professional card is enclosed. It is a very elegant little leather-bound twin diary and notebook, which anybody would be glad to possess.

ARCHITECTURE CONSIDERED AS PLAN AND SECTION.

Discussion.

The discussion following the reading of Mr. Statham's paper on "Architecture Considered as Plan and Section," at the Architectural Association, on January 9th (the substance of which lecture was printed in last week's Journal), was rather shorter than usual, although the subject was one that might well have been expected to provoke an animated debate.

Mr. Arthur Keen, opening the discussion, said that Mr. Statham had gone to the very basis of things.

Mr. Maurice B. Adams, proposing a vote of thanks, said he was glad that the lecturer had taken so high and monumental an attitude at a time when we seemed to be considerably degenerating. Having seen the Royal Academy students' work recently, the speaker was forced to believe that we did not seem to have the same ideas that animated Street and Burgess, for instance. The latter's two fine drawings, by Haigh, for the Law Courts, the speaker thought might be lost if no effort was made for their preservation.

(It had been previously announced that Street's drawing for the same building had now been presented to the Association.) Drawings nowadays appeared to be getting theatrical. If they looked at competition designs, they would find that the man who succeeded was the one who could grasp the general lay-out of a scheme. The speaker then referred to

Mr. Norman Shaw's plans of London houses, at Kensington, and Queen's Gate, alluding to the ingenious management of staircases and subordinate parts, producing a dignified interior upon a narrow site. He had always thought that the magnificent lay-out and general contour of the Houses of Parliament would outlive the battle waged about Pugin and Barry. That Pugin had a hand in the building there was no doubt, but the conception was Barry's.

Mr. Gerald Horsley, seconding the vote of thanks, said he had enjoyed the lecture immensely. Students, he thought, should study plans to a greater extent than they did; and the habit of roughly indicating plans in the sketch book when on an excursion was distinctly helpful. Mr. Statham had said, in effect, that detail did not matter so long as it was good. [Mr. Statham: "I said what kind of detail."] It was comparatively easy to get a good plan, and to make the drawings of sections and elevations, so long as one worked to a small scale. But the difficulties began when they came to the detail. Mr. Statham's remarks about the Pantheon showed how very important detail was to a building. He also said that the plan of the Houses of Parliament could have been expressed just as well in Renaissance as in Gothic. Surely this was because it was a Renaissance plan. He did not think they would be pleased with the Houses of Parliament if in any other form than at present. They could not sacrifice the Victoria Tower; nor would they like St. Paul's so much had the detail been designed by someone else than Wren.

Mr. W. J. H. Leverton said he was pleased to hear the old bogey contradicted about Pugin having been the architect of the Houses of Parliament. Pugin was a man who belonged to a different school. Burgess's drawings for the Law Courts were for many years in the custody of the South Kensington authorities, who ultimately decided to destroy them; but some were rescued by the Office of Works, from whom the Association might perhaps be able to obtain them.

Mr. Arthur Keen, speaking of Mr. Norman Shaw's plans, referred to a house in Cadogan Square which, by a clever arrangement of plan, had a large entrance hall practically the whole width of the house. He wished that Mr. Statham had included lighting within the scope of his paper as well. Mr. Statham's plan of Whitehall was extremely interesting, and it would be instructive to publish it for purposes of comparison with the work actually carried out. Mr. Statham's paper showed the urgency of planning, as competitions of recent years had shown it to a marked degree. The successful man was the one who produced the successful plan.

Mr. H. H. Statham, in reply, said he felt that there had not been enough sections to illustrate the lecture, but they were rather difficult to obtain. As it had been suggested, he might be able to think about lighting for a future lecture. Pugin was a great sectional designer; and a church appearing to be small outside would have an effect of spaciousness within. With respect to the Pantheon, what he meant was that the greatness of the building was not dependent upon the detail, but rather in spite of it. He queried whether Wren did design the detail of St. Paul's: probably Wren indicated the position of the swags, but they were most likely worked out by the craftsman. Nor-

man Shaw liked high dining-rooms; his own drawing-room was low, and went down six or eight steps to the dining-room. The competition for the Law Courts was historical, and he thought all the drawings should have been preserved. With regard to the scheme for Whitehall, this would probably prove less economical than the one carried out; but at the time there was some talk that all the land up to Craig's Court could be obtained.

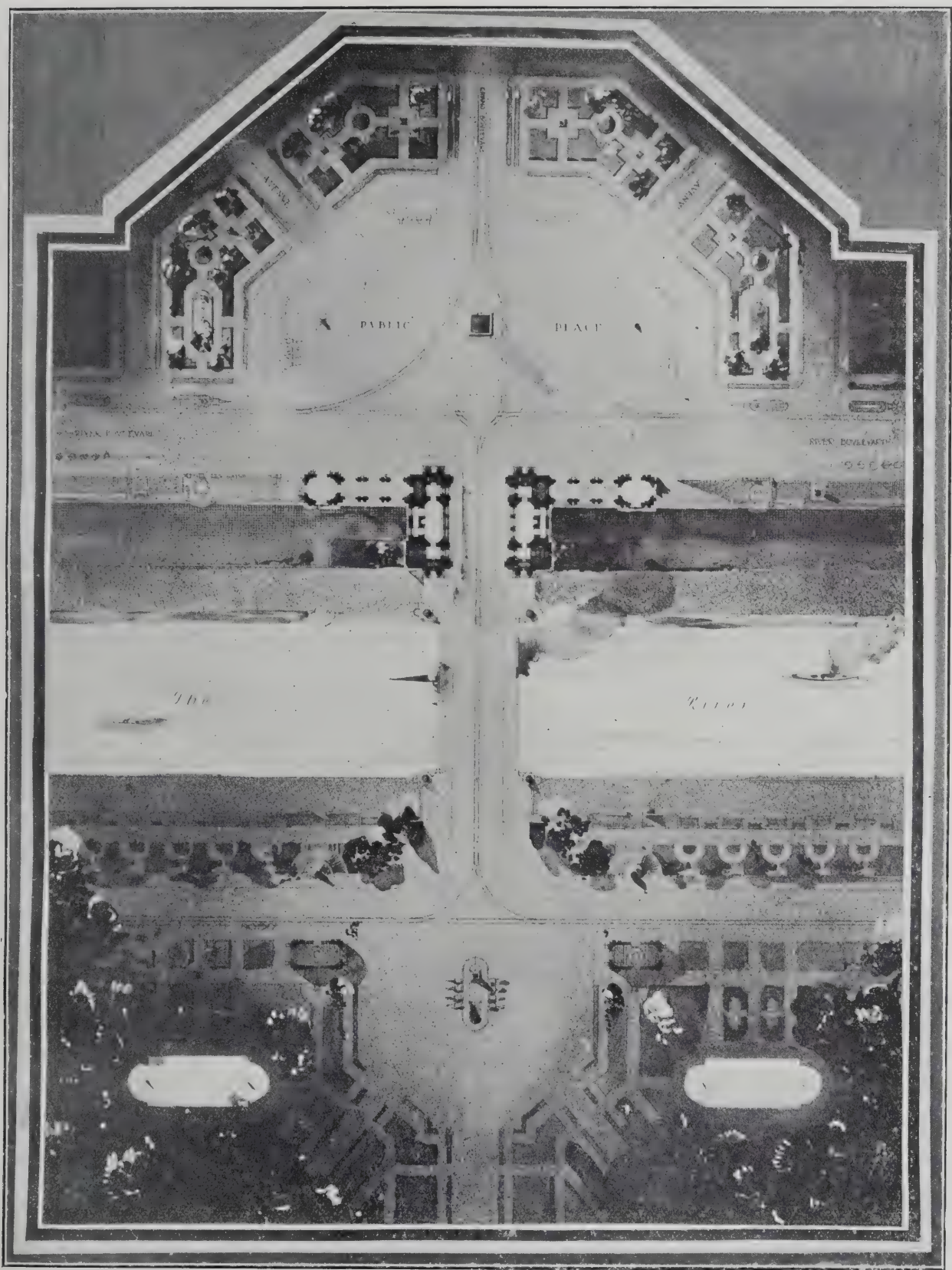
TRADE AND CRAFT.

Telephone Apparatus and Supplies.

One of the most complete descriptive catalogues yet published, dealing exclusively with telephone apparatus, is that which has been issued by the Western Electric Company, Ltd., Norfolk House, Victoria Embankment; North Woolwich, Sydney and Johannesburg. All the latest instruments are shown, including those for the central battery system, which has been introduced and perfected by this firm. The characteristic difference between the central battery and the magneto systems is stated as being that in the former the energy requisite for talking and for signalling the Telephone Exchange is supplied to the districts by a single large battery located at the central telephone exchange, whereas in the magneto system each subscriber's telephone is supplied with a battery and a hand generator for talking and signalling. The firm claims that, with more than thirty years' experience in the manufacture and operation of telephones, they have been enabled to develop their central battery apparatus and equipments to the highest degree of excellence. It is pointed out that the principal advantages of the central battery system consist in improved service and lower operating costs, lower maintenance costs, and better transmission. "The character of the signals from the subscriber's telephone to the central exchange results in quicker and more accurate service, rapid disconnections, and great economy in the expense for operators, each operator being able to handle a great many more lines. Economy in maintenance comes from concentration of the apparatus requiring most frequent attention at the central exchange, where it is under the constant care of experienced men whose time is not wasted in frequent journeys to subscribers' telephones. The elimination of the local telephone batteries effects a very considerable economy, while the absence of the battery and of the generator enables the subscribers' sets to be made more compact and pleasing in appearance. The volume of transmission obtained with the central battery system is uniform, whereas that obtained with a magneto system falls off in service as the batteries deteriorate. The magneto system, however, has the advantages of low first cost of equipment, simplicity of construction, and the ability to operate successfully over long lines of which the insulation is not the best. It will probably always be used for long rural lines and in the smaller towns and villages; and the choice between the two systems depends largely on local conditions. Full particulars of both systems are contained in the catalogue, which, indeed, is a very comprehensive guide, copiously illustrated, and having a full index, to every phase and feature of telephone apparatus and supplies. We are informed that copies will be gladly forwarded to firms directly interested in the sale and installation of telephones.



SOANE MEDALLION DESIGN FOR "AN ENTRANCE CA



TO A CAPITAL CITY." BY PRENTICE MAWSON.

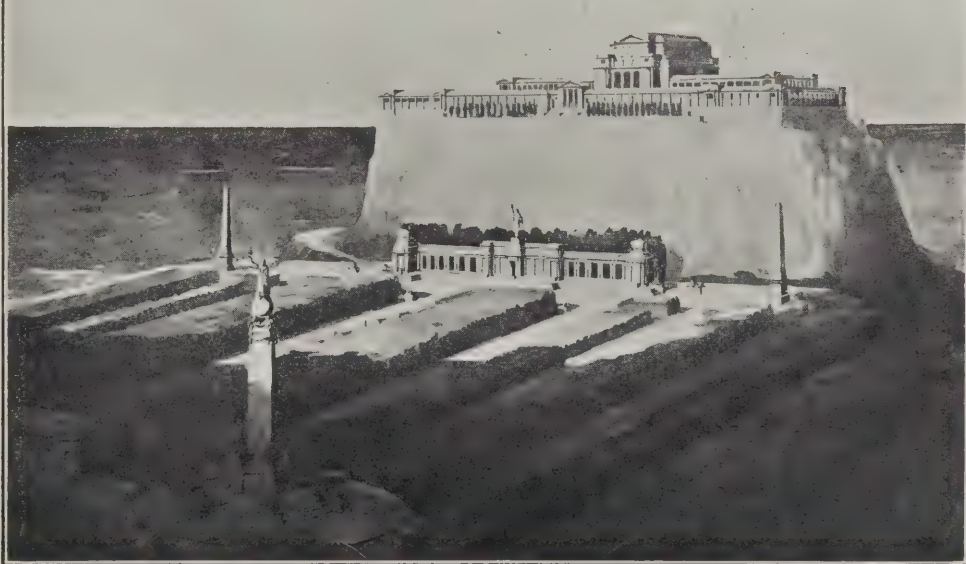
THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JANUARY 25th, 1911.

Volume XXXII.

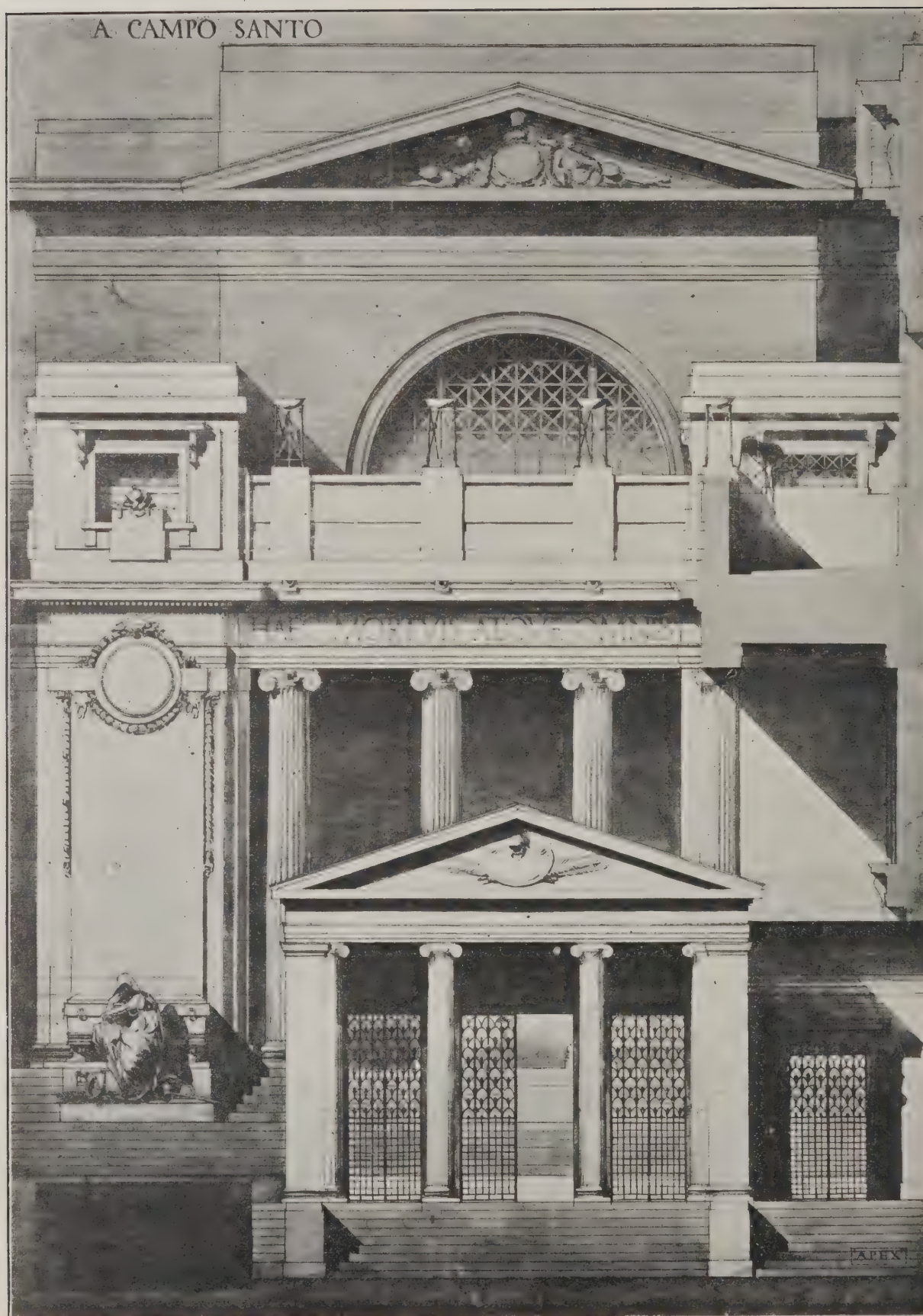
No. 835

DESIGN FOR THE TITE PRIZE
A CAMPO SANTO PERSPECTIVE



This design gained honourable mention in the competition of the Royal Institute. A detail of it is given on the next page.

BY V. O. REES.



TITE DESIGN FOR A CAMPO SANTO: DETAIL OF CHAPEL AND PORTION OF ENCLOSURE BY V. O. REES.

THE ARCHITECTS' & BUILDERS' JOURNAL.

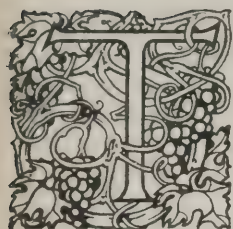
JANUARY 25th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 835.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Street Fronts.



HE designing of a front to an ordinary sized street, house or shop, forming the only visible portion of a narrow slice of building crowded up between other similar slices, is an architectural problem of a special character. It is the only kind of architectural design which is concerned with only one side of a building, with no neces-

sity for considering the design of the return sides; and it is the only one in which the architectural treatment is practically independent of plan. A street house almost necessarily means an entrance doorway at one side and the remainder of the ground storey taken up with the windows of the front room; and what is the plan of the part of the house in the rear of the front room can have no influence on the design of the frontage. In the case of a shop there may be either an entrance door at one side, or an entrance in the centre, and so far as that the arrangement of the shop does influence the front design. Above that it is generally a case again of front rooms extending the whole width of the building, and not affected by the back plan, except that a long showroom on the upper floor, running a good way back, will require special provision for lighting.

The dwelling-house front is both the easiest and the pleasantest to deal with. The two principal questions to be settled are: (1) considering that the ground floor must have a door on one side and a window or windows not corresponding to it on the remaining part of the front, is this grouping of openings to be maintained throughout the height of the front, or is the ground storey to be a separate design cut off from the upper portion and the latter treated symmetrically? (2) Is the general principle of the design to be vertical or horizontal?

Our predilection is in favour of cutting off the ground storey, by a strongly marked cornice, and by a different or differently treated material, from the upper part of the front; where, as is almost always the case, the first floor room forms a large room across the whole width of the building, this is the treatment most in accordance with the facts. The system is sometimes adopted of making a bay window on one side of the front door, and carrying this up through two or three storeys. There is a certain picturesqueness of effect thus obtained, and it gives a little variety to the plan of the first floor room, but there is always some difficulty in dealing with the termination of this bay above, where it clashes with the almost necessarily centre line of the roof. A better result is generally obtained by treating the ground storey separately and keeping a central axis line above it.

As to the question of vertical or horizontal treatment, it depends no doubt a little on the style of detail adopted; but as a house is a building divided into storeys which are of somewhat different character, the horizontal division seems the most suitable. Grouping windows vertically, within two or three lofty recesses between main piles, is more a kind of treatment for a warehouse than a dwelling-house. As in most cases in a street residence the front first floor room is the principal room, and at any rate this is the principal

floor of the house, the windows of that storey call for a specially emphasised treatment in design and decoration or mouldings. They should not be grouped with the upper windows belonging to storeys of less importance. There will usually be found the possibility of treating the top range of windows in a manner different from all the rest—more numerous, smaller, and closer together, so that they give the idea of a kind of frieze—a half playful finishing storey to the building.

Whether a street front should be gabled or not depends a good deal on what is the general character of the remainder of the street; also, of course, on the style of detail adopted, and whether the general treatment is vertical or horizontal. Granting that the horizontal treatment is the best architecturally, there is no doubt that the horizontal termination, with a balustrade, is the most suitable and the most convenient. It is a question whether the gable termination for street houses ought not to be regarded as a thing of the past. We fully admit its picturesqueness, but it is inconvenient for roof drainage, and it does not represent modern ideas and facilities in roof construction. We have come to a period in constructional facilities in which sloping roofs are no longer a practical necessity for throwing off rain; we can now, at no exorbitant cost, make roofs flat and at the same time impervious; and there would be many advantages in adopting them as the general covering of street houses. Among other things, they would afford facilities for the formation of roof gardens; a great addition to the amenities of life in town districts that are too closely crowded to admit of a private garden to each residence.

A point which ought always to be considered in designing narrow house fronts, but which is often neglected, is the provision for the termination of cornices and mouldings. As a property, a street house front is bounded by the centre line of the party wall. A cornice or moulding forming part of the design should not therefore go beyond this division line. To cut it off square is of course a very clumsy expedient; what has sometimes been done, and ought always to be done, is to keep the margin of the actual design a little within the line of the party-wall centre—a few inches or a foot—and to return the cornice on itself within the party-wall centre-line. This is most neatly done by setting back the face of the wall a little at each side, leaving a strip of wall which is legally part of the tenement, but is not part of the design, and against which any projecting cornice can be stopped either by a return on itself or by a console or other such feature introduced to stop it. But the return of the cornice on itself is in general both the best and easiest way of doing it.

Shop fronts, to which a good many of the above remarks apply equally, differ from house-fronts in that they may have central entrances instead of side ones, which renders it more easy to obtain an axial balance to the design, and in that they demand a great expanse of window in the ground storey, and sometimes, where there is a show-room above, in the first-floor storey also. This is one of the great architectural difficulties in the treatment of shop fronts, since it is almost impossible to render a front architecturally satisfactory in which all the lower part is glass. In this case, and

where there is no showroom immediately over the shop, the conditions imperatively demand that the ground-storey should be separated from the rest of the front by a strongly defined cornice of its own, and be treated as a special design. In regard to the great expanse of glass, there are some signs of a relaxation of the demands of tradesmen in this respect; some of them are beginning to perceive that an effectively designed shop front, with some appearance of architectural stability about it, may be a sufficiently good advertisement to atone for the loss of some portion of the traditional expanse of plate glass. It would be very desirable that, in a masonry design, the necessarily large opening of the shop front should be bridged by an honestly constructed arch; but where this cannot be done, the iron girder which must take the place of the arch ought to be visibly brought to the front, and decoratively treated in some way. To use it as a secret and hidden means of holding up an apparent stone arch in front which we know could not stand if it were really built as it pretends to be, is a flagrant disregard of the best principles both of architecture and building. In the methods of using iron constructively and at the same time architecturally in shop fronts the Germans are far beyond us in ingenuity of construction and variety of design; and English architects who are likely to have much practice in this class of building would do well to take hints from the many clever and original designs for shop architecture which are to be found in various issues of the "Berliner-Architekturwelt."

Where a large showroom comes immediately above the ground-floor shop, a fine and bold effect may be produced by combining the windows of both under one lofty arch, the floor between the two forming a visible feature in the metal structural design included under the arch.

The Sanity of Genius.

SIR WILLIAM RICHMOND had some interesting things to say about genius in his concluding lecture at the Royal Exchange last week. Genius had been thought by the Greeks to be a state of extraordinary excitation, and by Carlyle to be a capacity for taking pains. Probably it combined both, but the great geniuses had all been essentially sane. Eccentricity was not necessarily genius; if it were there would be a great many more geniuses than there were. Success depended both on industry and on purity of motive. The half-genius ceased to be remembered when his paradox was forgotten. But true genius would survive, as that of Homer had done. It was intimately associated with simplicity, and the man of genius both believed and disbelieved in his ego, knowing that only will could keep his power in a straight course. Art was for him a constant struggle for truth, as it had been for Michelangelo, who also pursued the ideal of liberty, and took the human form as an instrument whereby he might express all the emotions of the soul. The frivolous courtesan of Florence had no inspiration for him. His Virgin was not a jewelled lady, but a peasant and an impassioned mother. He saw right into the heart of human beauty. But scarcely anything that he conceived was finished—there was always the sense of waiting to accomplish. Yet he finished the Sistine Chapel with its thousand thoughts and countless beauties, constituting altogether the world's highest achievement in the art of design. There was a story running right through it; it was an allegory of Redemption and Liberty. The masterly figures of youthful vigour, which some had thought had no connection with the scheme, really typified the struggle for freedom from the shackles of Church and State. This motive was continually reiterated in Michelangelo's art; it concerned the story of the human race which he illustrated in abstract humanity. Liberty of thought—that was part of the great ethic idea, which comprised the perfection of creation, the failure to maintain it, and the struggle to recover it.

Building Interests in the New Parliament.

THERE are 128 English, Welsh, and Irish Private Bills, and 12 Scotch Provisional Orders deposited in the Private Bill Office for consideration in the ensuing Parliamentary Session. This is a slight increase on last year, but a very considerable falling off from a few years ago. No schemes of any particular novelty are being brought forward, but considerable interest will doubtless attach to the fate of the Bills for what is known as the railless trolley system of tramways. Last session the Corporation of Leeds and Bradford were given powers to install this system, and now a number of other local authorities and several private promoters are asking for similar powers. The proposed Greater London Railway will also be a matter of great interest, as the proposal is to construct a line from Feltham, to run through the growing urban districts of the North and East of London, and finally to terminate at the Docks. Junctions with all the great trunk lines of the North are contemplated.

The Annual Meeting of the National Federation.

AMONG the subjects on the agenda of the annual general meeting of the National Federation of Building Trades Employers of Great Britain and Ireland, which is being held to-day at the Trocadero Restaurant, Piccadilly, W., the chief matters of trade importance that are set down for discussion are the following (a) "Are architects justified in endeavouring to enforce the literal interpretation of obsolete specification descriptions in respect to materials?" (b) "The desirability of the building trade adopting a holiday scheme." (a) was to be opened by Mr. R. Arthur Costain (Liverpool) and Mr. J. Morice Wright (Sunderland), and (b) by Mr. G. Bird-Godson (London). With regard to (a), the terms are sufficiently explicit to indicate the intention. It has been on several occasions shown in this Journal that builders and contractors are frequently subjected to embarrassment, and occasionally to loss, by the specification of materials that can no longer be obtained, or have been superseded by goods that are at once cheaper and better for the purposes in view. Many—perhaps most—architects know quite well that in certain instances substitutes must be used, yet nevertheless they go on employing the obsolete descriptions. Conventional fictions of this kind are no doubt fairly prevalent in other industries also, and, the convention being mutually understood, no difficulty need arise where there is good faith on both sides. Given a cantankerous architect, however (and, impossible though it may appear, such phenomenally constituted gentlemen do occasionally flit across the builders' horizon), it is possible for him to put the contractor to a vast amount of harassing search and enquiry for materials that are possibly not procurable at all, or can only be got at prohibitive prices; while the ultimate failure to adhere to the strict letter of the specification may be made to assume a very serious aspect in a court of law, a judge or jury having little or no technical knowledge of such matters, and, mistrusting the allegations of "custom of the trade," being particularly prone to conceive a most detrimental prejudice against the builder who admits that he used substitutes; the explanation of the fact being too often regarded as merely a more or less lame excuse. It is upon some such lines as these, probably, that to-day's discussion will run. As to (b) the question probably is whether or not it may be desirable to appoint a general or simultaneous "close time" during some convenient period of the year, so that the inconveniences arising from the present unconcerned system may be avoided. Among further matters set down for consideration are a report on recommendations in regard to Clause 30 of the Agreed Form of Contract, and a report on a former resolution "that the Administrative Committee be requested to take into consideration and advise upon the best means of approaching

local authorities with a view to the general adoption by them of the National Form of Contract." The meeting will also be asked to consider the desirability of the Federation becoming affiliated to the International Federation of Building and Public Works Contractors; and there will, of course, be the usual routine business, which includes the annual election of officers and representatives. Councillor Smethurst, J.P., having fulfilled his term as President with marked distinction—his year of unremitting and enthusiastic devotion to the business and the cause of the Federation earning for him a very special meed of recognition—will make way for Mr. J. W. White, of Sunderland, whose position as senior vice-president, if the normal course be followed, will be assumed by Mr. James Wright, of Nottingham; while the hon. treasurer, Mr. Frederick Higgs, of London, should succeed to the junior vice-presidency, vacated by Mr. Wright. A report of the meeting will appear next week.

A Definition of Paint.

SOME daring spirits are out on the perilous quest for a definition of paint. One exacting expert insists, in his vigour, that "a definition must embrace all general principles, and must be free from every limitation, actual and possible, present or future," in which one can but particularly admire the scorn of time and of the changes that it is supposed to bring. The following definition, taken from a popular dictionary by this correspondent, seems to fall somewhat short of his ideal:—"Paint: a substance used in painting." It recalls for us the very joyous memory of an exquisitely neat definition we once saw in an architectural glossary: "Cow-shed: a shed for cows," which has always struck us as being profoundly thought out, although its helpfulness is perhaps somewhat marred by its severe technicality of expression. Pursuing its researches in the popular dictionary, the correspondent finds that "to paint" is "to cover or besmear with colour." Fastidious as he is, this fails to afford him full satisfaction. He suggests that "a suitable definition could be framed somewhat on the following lines: Paint: a self-hardening adhesive mixture consisting of particles of solid matter (pigments), suspended in liquid," and that "to this might be added by way of amplification: Paint must be capable of easy application; it must adequately beautify and reasonably protect the surface to which it is properly applied." This is offered "as a basis for general criticism, in the hope that a satisfactory solution may be ultimately arrived at." Personally, so long as the stuff itself is satisfactory, we do not feel greatly inclined to worry much about the definition.

The Placing of Carving.

SOME interesting observations on carving are made by Mr. W. Aumonier, Jr., in a paper read before the Architectural Association, and published in the January issue of the Association "Journal." Referring to the placing of carving, Mr. Aumonier contends that the architect should certainly consult his carver before giving the builder any details for the carving. "The carver should always be allowed to make his own setting out for the stone required for carving. His practical experience of carving may be of service, for what looks nice on a flat drawing in your office, may be quite wasted in a London street. Above all, concentrate your carving; do not fritter it all over the building. If funds are limited, spend your money round the doorway. Remember that is the average line of sight; make a brave show at the entrance, and rely on architectural proportions for the rest. . . . It is no use putting a mass of sculpture at the top of a building roof, high in a street only 40 or 50 ft. wide. Remember the Parthenon was not designed for Cornhill. The reason we put carving on buildings, I take it, is to enrich the architecture, to bring a play of black shadows and soft undertones in bands or

masses upon the building's face. You must take into consideration the soot of London: how it will hide in time your highly carved modillions. Your building will be new only a little time, but it may be blackened for centuries. Realise the power of this change as you design it, and put your carving where it will be washed by the rain. Look at St. Paul's, and see the effect of this, or at St. Martin's Church, which I consider the finest piece of scene painting nature has ever done, owing to the prevailing south-west winds and rain always washing one side only of the columns."

Restoration at Ripon Minster.

Restoration work has been in progress at Ripon Minster for some months. First to be dealt with were the flying buttresses of the choir, two of which had the greater part of the arch renewed. This was rendered necessary owing to the decay of the grit-stone with which they were restored forty-five years ago. The arches have been renewed in Tadcaster limestone. The Transitional arcading on the clerestory of the choir has been restored where necessary in grit-stone from Pateley Bridge. A "pilaster" buttress on the west side of the north transept has had to be largely repaired owing to a gargoyle above discharging, so that the wind drove the water on to the face of the building, and as a consequence the softer stones perished. Considerable repair has been required on the Perpendicular buttresses on the nave, which, with the possible exception of the apsidal east end of the Lady loft, or library, form the finest external feature of the minster. On the gablets to these buttresses many of the carved crockets and finials are not only shattered, but shapeless. They also have been restored in Tadcaster limestone, together with various repairs to tracery and hood-mouldings, which had not been included in the previous restoration, and had now become urgent. The architect for the work is Mr. J. Oldrid Scott, and the contractor, Mr. T. S. Ullathorne, of Selby. The carving has been executed by Mr. John Baker, of London.

Suggestions for the Royal Academy.

In the columns of the "Morning Post," a discussion has been proceeding on the subject of the holding of a Winter Exhibition of Water-Colours at the Royal Academy. Mr. Walter Crane, one of the correspondents, expresses himself as very dubious as to the necessity for holding such an exhibition, and incidentally makes reference to the recent Town Planning Exhibition, which, he adds, tended to foster the idea that this was the beginning of a new era in Academy exhibitions, and that larger ideas of the scope of art were to be entertained. "There was, indeed, a splendid suggestion emanating from the Royal Institute of British Architects—that an exhibition of decorative art should be held at Burlington House as a winter show in which mural painting and design in association with architecture might be displayed; but, though well received, and even actually entertained for a time, it is disappointing to hear this idea has now been abandoned. One feels, therefore, rather hopeless about offering suggestions to the Royal Academy, who probably do not feel at all in want of them. . . ."

The Cinderella of the Arts.

A writer in the "Manchester Guardian" observes that very few Londoners, it is believed, spent any of their Christmas holidays walking about the town inspecting the new buildings added to London during the year. In Regency days contemporary architecture was "spied" on and "quizzed" a great deal by lay critics who wrote books and pamphlets on the subject, and we can see from the caricatures of the time that a new edifice of any individuality was the talk of the town. "In the eighteenth century every man of family



TITE PRIZE DESIGN FOR A CAMPO SANTO. BY G. H. FOGGITT.

was supposed to know something of architecture, and to have acquired correct opinions on the art during the grand tour. Even so late as Mid-Victorian days people sometimes became excited about architecture, and considered it something to have an opinion on, just as one had opinions on pictures. In our day architecture seems to have largely dropped out of public interest, except as regards questions of cost when the buildings are public ones. Of course many architects prefer this present public neglect, as they hold that it tends to free them from interference on the æsthetic side of their work from clients or committees with a little knowledge and many fancies. They point to the fact that the general level of London architecture is now higher than it has been for at least a century as a proof of their contention that architecture's laws architecture's patrons should give only so far as practical requirements are concerned. That, however, is not a view that has the support of Mr. Belcher and other heads of the profession, nor is it the case that the client who has thought nothing about architecture refrains from insisting on laying down the law that his Peckham chalet must look as like Chatsworth as possible at the money."

Kent County Council Offices.

The new buildings which have been designed for the Kent County Council by Mr. F. W. Ruck, the County Architect, are in Renaissance style, with rusticated work in grey granite surrounding the archways up to the ground floor, while the central three-storeyed portion will be faced in Portland stone; the wings and all the fronts facing the inner court being in Kentish rag and Portland stone. The Kentish rag will be carefully selected from the hardest beds of the best quarries, and will have a rock face. The council chamber is 52ft. by 39ft., and is placed on the first floor, at the north

corner of the site. The cost of the building, including the alterations to the present waiting halls to the Courts, Treasurer's, and Indictment offices, etc., calculated upon the estimated contents of 948,000 cubic ft., at 12d. per foot, will be £47,400, which sum should be sufficient to complete the work, including heating, lighting, and ventilation, but excluding the internal fittings of the Council Chamber, Grand Committee Room, and offices.

The Institute Competition Designs.

WE publish as a centre plate in this issue the Soane Medallion prize design for "An Entrance Gateway to a Capital City," by Mr. Prentice Mawson (who, it may be mentioned, is the son of Mr. Thomas Mawson, the well-known garden architect). We are also able to publish the Tite prize design for a Campo Santo by Mr. G. H. Foggitt, and the design for the same subject by Mr. V. O. Rees, which gained honourable mention. In our issue for last week we gave a detailed criticism of the several designs submitted in the competitions, but a few particulars may here be given in connection with the accompanying illustrations. The conditions for the Soane design set forth that there should be a gateway and gatehouse of monumental character, approached by a bridge over a river 120ft. wide. The Tite competition was for a Campo Santo on a rocky island rising out of an inland lake, and was to comprise a chapel of large dimensions with cloisters attached to it, providing wall and floor space for monuments and inscriptions; suitable provision also being made for fifteen gardeners and a resident surveyor. The disposition of the prize design is clearly shown by the plan on the opposite page, the chapel being centrally placed, and the cloisters carried on raised terraces on either side.

ARCHITECTS AND ACTIONS
FOR NEGLIGENCE.

Although the architect is seldom heard of as a defendant in an action for negligence, he is, nevertheless, exposed to attack, and may, at some time or other, have to justify his actions. His liability, however, is always limited by this—that he is generally employed either to give his professional opinion, or carry out work in the manner which he considers best. He cannot be held responsible for an erroneous opinion, or for an error in judgment. Just as a doctor cannot guarantee a cure, and just as the lawyer cannot undertake to win every case, so the architect cannot ensure the possibility of every scheme which he devises.

The question—What is reasonable care which an architect ought to display in the performance of his work?—is one which must be answered by reference to all the surrounding circumstances. The degree of skill is such as may be expected in the circumstances of time and place from an average person in the profession—one neither specially gifted nor extraordinarily dull. Where this reasonable amount of information and skill proportioned to the duties that are undertaken is found, there is no liability for errors of judgment in the application of knowledge. Each case must depend on its own circumstances; with the paramount consideration that when an injury has been sustained that could not have arisen from the absence of reasonable skill or diligence, then there is no liability. To render a professional man liable for negligence, it is not enough that there has been a less degree of skill than some other professional man might have shown. Extraordinary skill is not required unless professed or contracted for; a fair average degree of skill is all that can be insisted on. Or, as it has been laid down by an old judge, a person who enters a learned profession undertakes to bring to the exercise of his business nothing more than a reasonable degree of skill and care. He does not undertake, if he is an attorney, that he will gain a cause at all events; or, if he is a physician, that he will effect a cure; nor does he undertake

to use the highest possible degree of skill. There may be persons who have higher education and greater advantages than he has, but he undertakes to bring a fair, reasonable, and competent degree of skill.

While an architect may be held liable for negligence, if he is found to be wanting in the competent skill of an engineer, he will not be responsible for defects resulting from methods of construction which his employer orders him to adopt. This principle has been applied to the case of an architect. In the case of *Turner v. Garland*, 1853, 2 H.B.C. 2, an architect was employed to prepare plans for and superintend the erection of certain model lodging houses, in accordance with the latest improvements. Amongst other things, his employer told him to put in a new patent concrete roofing, which cost only a quarter of what lead or slate would have cost. This roof proved a failure, and had to be replaced in a few years at a cost of £230. The architect was sued for negligence. In summing up, Erle, J., said: "If the architect possesses competent skill, and was guilty of gross negligence, although of competent skill, he might become liable. If he were of competent skill, and paid careful attention to what he undertook, he would not be liable. You should bear in mind that if the building is of an ordinary description, in which he had had abundance of experience, and it proved a failure, this is evidence of want of skill or attention. But if the building is out of the ordinary course, and you employ him about a novel thing about which he has had little experience, failure may be consistent with skill." In the event, the architect was held not liable. In this case it will be observed that the use of the roof in question was suggested by the employer himself: had it been recommended by the architect, he would probably have been held responsible for its ultimate failure.

It would seem that an architect is bound to have some slight acquaintance with the law in order to protect his clients from the risk of having actions for trespass brought against them.

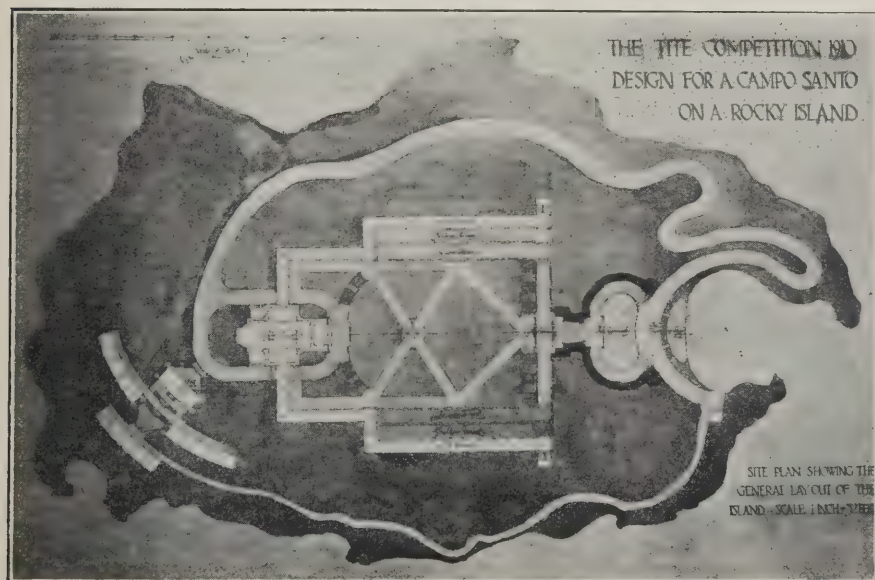
In the Irish case of *Monks v. Dillon*, 1884, 12 L.R. Ir., 321, works were executed by a contractor for a drainage board under the superintendence of their

engineer, who had prepared the plans and often saw the works while in progress. Some of the works amounted to a trespass on the plaintiff's land. It was decided that the engineer was liable for the trespass committed.

Similarly, it is apprehended that an architect should be acquainted with the local by-laws, etc., in order that he may protect his client. Within the Metropolitan area, for instance, the provisions of the London Building Act may have to be observed.

The results of negligence in supervising were illustrated in the case of *Jameson v. Simon* (1899, 1F.1211). There the defendant, an architect, was employed in the usual way, in connection with the building of a house, in part of which there was to be a cement floor. The foundations for this floor were made of improper materials, with the result that dry-rot broke out in the woodwork after the house was completed. The building owner sued the architect for negligence and for passing, as sound, work which was really unsound. It was held that the architect was liable as he failed to exercise proper supervision, and that it is the duty of an architect to give such supervision as will reasonably enable him to certify that the work of the contractor is according to contract. The duty of an architect was thus declared by the Lord Justice Clerk: "He, or someone representing him, should undoubtedly see to the principal parts of the work before they are hid from view, and, if need be, I think he should require a contractor to give notice before an operation is to be done which will prevent his so inspecting an important part of the work as to be able to give his certificate upon knowledge, and not on assumption as to how work hidden from view had been done."

There are cases which appear to establish that an architect may be held liable for negligence in preparing an estimate of the price of the work done. He must exercise reasonable care; and may be held responsible if he relies on erroneous calculations. In order to ascertain what is reasonable care, it must be remembered that if the architect's estimate is made before working drawings and specifications are prepared, he has but sketch plans and a rough description of materials to estimate upon; for it is to avoid the expense of preparing working plans and specifications that the building owner asks as a rule for an estimate of the cost at this stage of the work. It is a question for a jury whether it is a condition, express or implied, of the contract that the estimate shall be reasonably near the actual cost (*Nelson v. Spooner*, 1861, 2 F. and F. 613). In *Monneypenny v. Hartland*, 1826, 2 C. and P. 379, the plaintiff was employed as architect by a committee to build Mythe Bridge across the Severn. In estimating for the erection of the bridge and the approaches thereto, he relied on the borings taken by a surveyor who had been previously employed by the committee, and took no steps to ascertain for himself the character of the ground forming the site of the intended works. The soil proved bad for the foundations, and it turned out that much deeper foundations were necessary than the plaintiff had anticipated. It was held that he could not recover his fees. Best, C.J., in giving judgment, said: "If a surveyor delivers an estimate greatly below the sum at which a work can be done, and thereby induces a private person to undertake what he would not otherwise do, then I think he is not entitled to recover



his fees. I think it is of great importance to the public that gentlemen in the situation of the plaintiff should know that if they make estimates, and do not use all reasonable care to make themselves informed, they are not entitled to recover anything."

If an architect does not certify, and the employers take advantage of his failure to do so in order to escape liability under the contract, there is one case which decides that the contractor may sue for and obtain his money. In *Kellett v. New Mills Urban District Council*, 1900, 2 H.B.C. 329, a contractor brought an action for the balance of the price of work done under a contract and for extras. The defendants, in answer to the claim, alleged that no final certificate for the contract had been made out by the engineers, and that the engineers had not certified that the whole was in a good and substantial state of repair or delivered up to their satisfaction as executed in compliance with the contract. By way of reply to this defence, the contractor alleged that he had done all the work which he agreed to do under the contract. He also claimed that the engineers were the servants or agents of the employers for the purpose of certifying the date of completion, and the amounts payable on such completion. It was further alleged that instead of determining the date of completion, or certifying what was due, the engineers had wilfully, arbitrarily, and persistently refused to determine and certify either the date or the amount, and that, in the result, they were discharged from their position as engineers. It was also urged that the defendants took advantage of this conduct of the engineers so as to prevent the contractor from receiving or recovering payment of the amount due to him for the completed works. Fraud was not suggested. A jury found that the works were completed: that the engineers had failed to certify; and that the defendants, being aware of such refusal, had taken advantage of it so as to refuse or unreasonably delay payment. It was held that the contractor could recover from the defendants without a certificate. Mr. Justice Phillimore said: "I am of opinion that the decisions are clear that where the employer colludes with the engineer, surveyor, or valuer, it is right to pass the engineer, surveyor, or valuer by, and to seek the determination of the Courts as in an ordinary contract; and I see no difference between the misconduct of the engineer, surveyor, or valuer being procured by the employer, and the employer knowingly taking advantage of the man's original misconduct. . . . I think they knew here, not merely that the engineer was not certifying, but that he was going through the process of pretended inquiry, which was almost worse than his refusing to inquire."

It may be taken, then, that for better or worse, a contractor places himself in the hands of the architect nominated by the building owner; and unless there is fraud or collusion, the terms of the contract cannot be ignored. As there is no wrong without a remedy, the contractor can recover against the architect, or else call upon the employer to appoint, or concur in the appointment of, an engineer who will grant the necessary certificate.

A question may sometimes arise as to who is entitled to sue the architect for negligence. He acts as an intermediary between employer and contractor. Which of these two parties may support a claim for damage?

It cannot be too often pointed out that the relation of the architect to the contractor is not the same as his relation to the employer. So far as the contractor is concerned, the architect cannot be held liable for negligence. The contractor accepts him as an intermediary between himself and the employer, to determine questions arising under the contract, and an opinion or decision, honestly given, cannot be questioned in a court of law. Thus the contractor cannot sue the architect if it turns out to be a disastrous undertaking. With the employer, however, the relations of the architect are very different. He is the servant of the employer, and can be held liable for negligence.

THE VISTA AND THE RING.

A COMPARISON OF PARIS AND VIENNA.

"Some Notes on the Street Architecture of Paris and Vienna" formed the subject of a lecture given before the Liverpool Architectural Society last week by Mr. L. P. Abercrombie. The lecturer said he wished to illustrate in a general way some broad types of street grouping and design, and more particularly two special treatments—the Vista and the Ring. The former was perhaps better shown in Paris than elsewhere, while the latter was seen to advantage in the Ringstrasse of Vienna. The idea of a true vista, he took it, was twofold—it consisted in the elaboration and internal study of one building and the self-effacement of the avenue leading up to it. That naturally led to a double result. The first was the production of the very finest possible monuments; the other concerned the architecture leading up to the monuments.

Describing the chief avenues of Paris, Mr. Abercrombie remarked that the most energetic tidier up and straightener of vistas was Haussmann, who made them, and rightly so, the normal effect of Parisian architecture. The other typical phase of restrained town architecture for which Paris was famous was the square, in which an "ordonnance," or imposed architectural façade had been carried round, irrespective of different buildings inside. Instead of the monument acting as compensation for lack of variety, there was either the pure geometrical shape of the "place," or the immensely important rhythmic value of pure repetition. Sometimes, however, there was a monument in a square in the same way that there was one to a vista.

As to the architecture of Vienna, he said, roughly speaking, it might be divided into three groups, the Baroque of the first half of the eighteenth century, the period of the building of the Ringstrasse, and the new art of this century. A general prevailing characteristic common to Vienna architecture was the complete absence of German picturesqueness, and the strong prevalence of horizontal lines. The Baroque was found in the narrow, tortuous streets of the inner town, and in the range of buildings which formed the façade of the outer town facing the Glacis still to be traced at the back of the Ringstrasse. The second period consisted of the buildings lining the Ringstrasse, and the new art was chiefly to be found in the suburbs, and in the form of pavilions and monuments in the park. The Viennese did not appear to have trusted the new art architects with, or there had been no occasion for, a new building on the grand scale since this phase of design became prevalent in all the lesser arts and many of the lesser buildings.

Among the great urban styles of architecture which had been evolved in Europe—the mediæval in Nuremberg and Flanders, the styles of the three Louis and the two Napoleons in Paris, the Georgian brick of the London squares, and the stone of Bath and Edinburgh—the Viennese Baroque of the first half of the eighteenth century certainly held a high place. Modern Viennese architecture had its great opportunity, denied to the Baroque, on the formation of the Ringstrasse, and the demand for at least ten buildings of the first magnitude, and twice as many public buildings of secondary importance; with the site, setting, and general surroundings in most cases carefully arranged for each building, and its effect in relation to its neighbours consciously studied. Unfortunately, it could hardly be said to have risen to the occasion. In places the Ring appeared to be an exhibition of samples of different architectural styles. A worse feature even than this motley eclecticism was the smallness of scale which characterised these large buildings, with the exception, perhaps, of the Town Hall, the Parliament House, and the theatre.

Mr. W. H. Lever moved a vote of thanks to the lecturer, and remarked that while he had never visited Vienna, what he had heard from Mr. Abercrombie had disillusioned him regarding its architecture, which he had imagined was on a finer scale. The surroundings of flowers and trees were evidently much grander than the buildings. As to the vistas, which Vienna lacked, and which Paris possessed in abundance, he hoped English cities would not become slaves to the idea of the vista. Many Continental cities, he thought, tended to monotony; there was a greater charm about the variety of English cities. But with respect to Haussmann's planning of Paris, he mentioned that, although costing twice the amount estimated, it had yielded the city cent. per cent. per annum in the patronage of visitors, and had proved the best civic investment Paris had ever made.

OBITUARY.

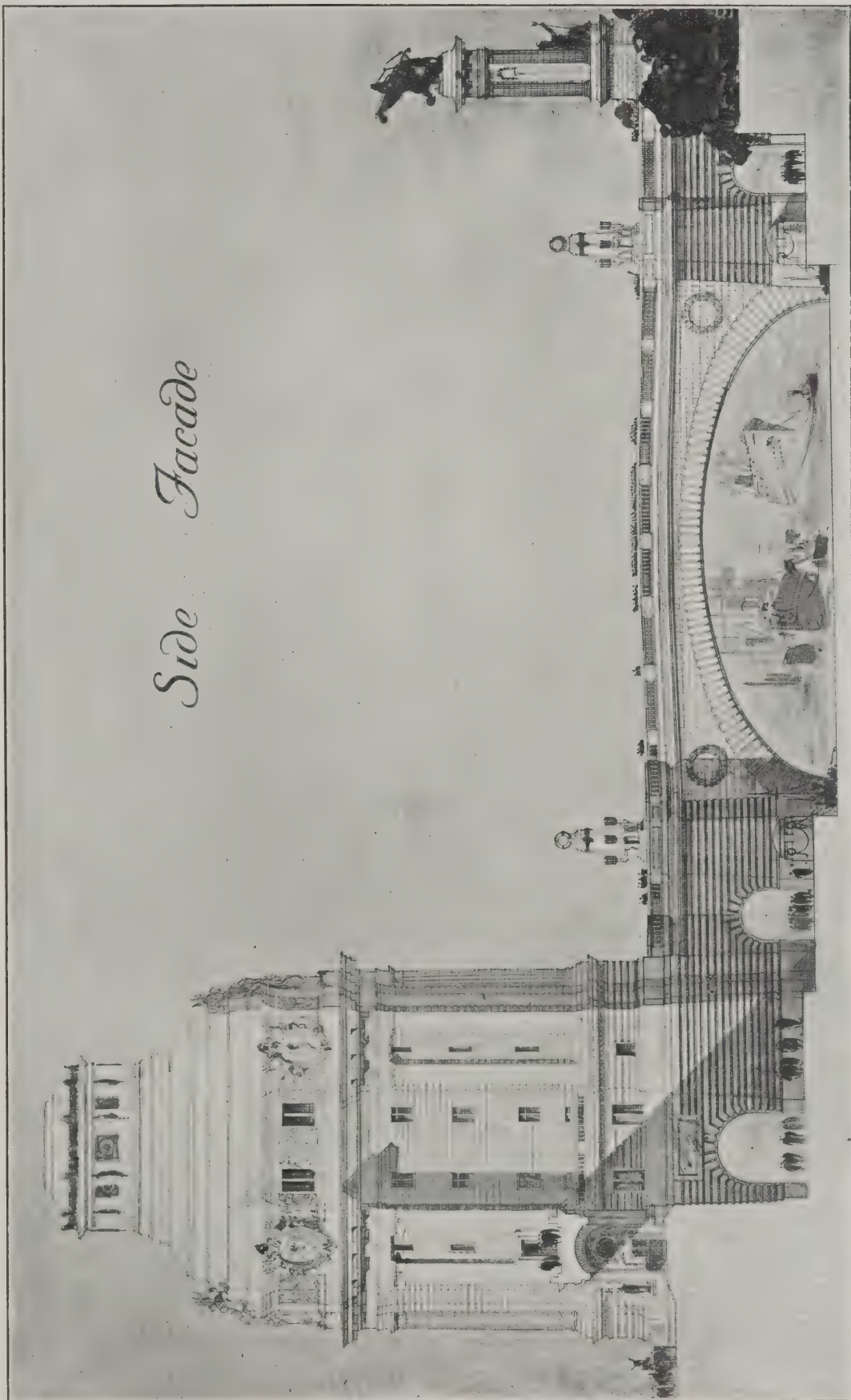
Mr. Andrew Murray.

Mr. Andrew Murray, F.R.I.B.A., formerly City Surveyor, died rather suddenly on Tuesday last week at his residence at Marlborough Hill, St. John's Wood, aged 72. Educated at the City of London School, he entered the service of the Corporation in 1854 in the Architect's Department, and remained until 1906, when he retired on a pension. He served under three City architects—Mr. J. B. Bunning, Sir Horace Jones, and Mr. A. M. Peebles. On the death of the last named in 1891 Mr. Murray was appointed his successor under the title of "City Surveyor." During his association with the Corporation, Mr. Murray was responsible, wholly or as a subordinate, for many of the buildings erected by the Corporation, including some of the markets and schools belonging to the City.

Mr. John Wales.

The mystery surrounding the disappearance of Mr. John Wales, a Walton-on-Thames architect, has been solved by the finding of his body in the river at Hampton in an advanced stage of decomposition. Mr. Wales, who was 42 years of age, had been a sufferer from cancer, and after his disappearance on December 1st a bloodstained razor and a quantity of blood were found in his bedroom, together with a note intimating that he had gone to the river.

Side Facade



SOANE MEDALLION DESIGN FOR "AN ENTRANCE GATEWAY TO A CAPITAL CITY." BY PRENTICE MAWSON.



The walls and columns are of Painswick stone, and the floor and stairs are of Pentelikon and Irish black marbles. The balustrading is of bronze.

STAIRCASE AT NO. 10, CARLTON HOUSE TERRACE, LONDON. DETMAR BLOW AND FERNAND BILLEREY, ARCHITECTS.

EGYPTIAN ART.

In a paper which he read before the York and Yorkshire Architectural Society on January 11th, Mr. J. Stuart Syme said Egyptian art, as might be expected from the remote position it occupies in history, was very closely dependent for its characteristics on those of the race which practised it, and on the conditions under which it lived, and no study of the one is complete without the other.

Apart from articles of domestic use, toilet appliances and the like, there is little that is left to us which was not connected in some way with the religious life of the people, and with their profound belief in the immortality of the soul. Had it not been for this belief we can hardly suppose that they would have been at such pains to construct and adorn with such wealth of sculpture and painted decoration the various tombs and monuments from which chiefly we obtain our knowledge of their life and art.

So far as we can judge from contemporary records, the tools employed for carving in wood or stone, and the method of using them, did not differ greatly from those in use at the present day. In addition to various chisels and mallets, they used the bow-drill, the saw, and the gouge. They were very partial to the use of the adze in wood-working. The tools were of bronze and iron, and we have no evidence that they had any knowledge of steel, or had any method of tempering to an unusual degree of hardness. Wooden statues, if of large size, were framed up owing to lack of large timber. The Egyptian artists were very skilful in line drawing, which was really the basis both of their decorative painting and their bas-reliefs. They had regular methods of study for beginners, arranged progressively from simple objects to finished heads, capitals, etc. The models consisted of small plaques and cubes showing the object in various stages of execution. Bas-relief proper was not so much employed for surface decoration as simple incised work, or what has been called "relieved intaglio," in which the object was outlined with deeply incised lines, and swelled out gradually from the bottom of the recess thus formed, and slightly modelled. The bas-reliefs were almost invariably painted, the colours being used fairly pure and on conventional rather than naturalistic lines. Statues in sandstone, limestone, or wood were also painted, but those in granite or other hard stone were more highly finished off, and brought to a fine polish. Egyptian art did not undergo any marked development, once the characteristics of the style had been fairly established, and the differences were rather in degree than in kind, except as regards minor details of costume, technique, etc. The most vigorous work originated early during the ancient Empire, and some of the best examples date from about the Fifth Dynasty. From that time onward the tide of excellence ebbed and flowed, through the Middle Empire, till in the New Empire, after the overthrow of the "Shepherd Kings," issued a Renaissance during which the quality of the work produced probably excelled that of any other period. All Egyptian art, both in painting and sculpture, is extremely conventional, and many of their mannerisms and methods may appear crude and unjustifiable, but they were probably dictated by considerations which, in the circumstances, were fit and proper. Their decorations were, in fact, not mere ornament,

but rather histories and tales written for a purpose in a lazy age, the times of which were clearly defined and would be understood of all, and with an art which is worthy to rank high among the best the world has seen. Mr. Bellamy proposed a vote of thanks, which was seconded by Mr. R. R. T. Smith, and the lecturer briefly responded.

COMMERCIALISM AND ITS EFFECT
ON HANDICRAFT.

The growth of commercialism was the principal reason put forward by Mr. S. Perkins Pick, F.R.I.B.A., of Leicester, to account for the decline of artistic handicraft, on which subject he lectured before the Sheffield Society of Architects and Surveyors last week. He suggested that the deterioration was caused when the old guild methods were abandoned. The chief object of the guild conditions seemed to have been to ensure that only the best class of work should be done. The mediæval apprenticeship customs prevailed in all handicrafts from early days to the end of the eighteenth century, when manufacturing, with its specialising in departments, gradually destroyed that unity which was such a valuable outcome of the old-fashioned methods. The decline at the end of the eighteenth century was not confined to England and English work, but was experienced throughout all the more civilised countries of Europe. The advance of science during the nineteenth century, with its numerous inventions and discoveries, offered facilities for producing vast numbers of sham and cheap imitations of works more properly made by other methods, thus neglecting honesty—the first essential of true art. The lecturer showed a series of slides of silver, iron, and wooden articles, contrasting the early and later examples, and thus showing how the mid-nineteenth century work fell behind that of the earlier period.

CORRESPONDENCE.

"The Preliminaries of School Planning."
To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—On page 668 of your issue for December 28th, 1910, I see a misprint in my lecture on schools, viz., on last line but five, "windows" should be "winders." I may add that windows on staircases are best placed at the ends of the flights.

P. A. ROBSON.

Westminster.

Cavity Walls.

To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—In a recent paragraph headed "Cavity Walls," the reasons for and against their use are briefly referred to, but among the latter there is no mention of a very strong objection which is within my experience. I allude to the transmission of sound from one room to another. In one case I recall, the nuisance was so great that the original use of the rooms had to be discontinued altogether, as ordinary conversation between the occupants of the ground floor rooms could be distinctly heard by those on the second floor. It would be interesting to know if this peculiarity has been noticed by others.

FREDK. CHATTERTON.

Cairo.

LONDON MASTER BUILDERS'
ASSOCIATION.*Monthly Report.*

The usual monthly meeting of the Council was held at Koh-i-Noor House, Kingsway, W.C., on Thursday, the 19th inst., under the chairmanship of Mr. Leonard Horner (president).

Deep regret was expressed at the death of the late Mr. John Howard Colls, Past-President of this Association, and a prominent supporter of all the building trade organisations. Sincere sympathy was felt for the members of his family.

Mr. Wm. Shepherd was elected a trustee for the reserve fund, in place of Mr. Colls.

The question of supplying the "Architects' and Builders' Journal" to the ordinary members was discussed, and instructions given of which the members will be notified later.

It was decided to hold the annual dinner at the Whitehall Rooms, Hotel Metropole, on Thursday, February 23rd next, and the annual general meeting at Koh-i-Noor House on Monday, February 27th.

The draft of the annual report was submitted, amended, and approved.

Many matters of interest were discussed.

BUILDERS' FOREMEN'S ASSOCIATION
DINNER.

The seventeenth annual dinner of the above Association was held on Saturday last, January 21st, at the Holborn Restaurant.

The chairman (Mr. G. Parker), proposing the toast of the Association, said that no important building was erected without the builder's foreman, who was more cultured to-day than he had ever been in the past. Turning to the affairs of the Association, the speaker commented upon the absence of papers on architecture by architects, and suggested that such would prove invaluable additions to their series of lectures. The pension fund entitled a member when at the age of sixty to a pension of from 5s. to 8s. per week. Their Association was young, and would, he believed, be much stronger in years to come.

Mr. T. Reynolds (president), responding, urged builders' foremen less than 44 years of age to join the Association. The subscriptions in all amounted only to about 40s. per year. When the pension fund was started in 1903, their capital was about £300.

Mr. G. H. Renton, proposing the toast of "The Building Trades," predicted the time when, in view of fireproof construction, timber merchants would occupy advantageous street corners vending a modicum of timber impregnated with a substance that strikes only on the box.

Mr. Leonard Horner, P.L.M.B.A., in reply, commented upon the change in methods of construction, and recommended the study of reinforced concrete, and the reintroduction of the apprenticeship system.

Mr. A. J. Philcox proposed "The Architects and Surveyors," referring to architecture as "the most honourable and learned profession in the world." Mr. W. Batstone (replying in the absence of Mr. Josiah Gunton) said that the general foreman was inevitably a man who knew his job through and through.

Mr. G. W. Holt, proposing "The Visitors," urged all eligible non-members to join the Association. Mr. Thomas Costigan (secretary, L.M.B.A.) replied, and

made grateful reference to the readiness of the allied trades in coming forward to replenish the funds of charitable institutions.

Mr. Ben Carter then proposed the toast "The Chairman," to which Mr. G. Parker responded, saying that the pension fund would not reach last year's figure; but the total amount to be handed to the treasurer would be £150.

Interspersed with the toasts, an excellent musical programme was rendered.

COMPETITIONS.

LIST OF COMPETITIONS OPEN.

JAN. 30. BRISTOL. HOUSING AND COTTAGE EXHIBITION.—Particulars with respect to the competitions open to architects and builders may be obtained, not later than January 30, from Frank H. Bromhead, A.R.I.B.A., Leaze Cottage, Shirehampton, Bristol, hon. sec. The exhibition is to be held from September 4 to October 7, 1911.

JAN. 31. GLASGOW PUBLIC LIBRARY.—The Corporation invite from architects competitive plans of a branch library proposed to be erected at the corner of Saracen Street and Allander Street, Possilpark. Premiums of £50, £30, and £25 respectively will be awarded to the authors of the designs adjudicated first, second, and third in order of merit. Designs must be lodged on or before Tuesday, January 31. Particulars from A. W. Myles, Town Clerk, City Chambers, Glasgow.

FEB. 1. DUBLIN. NEW PAVILION, ROYAL HOSPITAL FOR INCURABLES AT DONNYBROOK.—Particulars in our issue for October 12.

FEB. 1. SUITE OF OFFICES, HULL.—The Guardians of the Poor for Sculcoates Union offer premiums of ten guineas, six guineas, and four guineas for designs for a suite of offices to be built in Margaret Street, Hull. Apply to J. H. Wild, solicitor, Clerk to the Guardians, 12, Harley Street, Hull.

FEB. 25. COTTAGE HOSPITAL, ST. AUSTELL.—Architects practising in the County of Cornwall are invited to submit designs for a cottage hospital to be erected on the Trewoon Road, in the Town of St. Austell. The estimated cost must not exceed £1,500. Three premiums, viz., £12 12s., £8 8s., and £5 5s., are offered for the three sets of plans which the committee may select, the premium of the finally selected architect to merge into commission. Designs to be sent to the Hon. Secretary, Mr. Henry Hodge, C.C., Trevarrick, St. Austell, by February 25th, 1911.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Premiums of £15 and £10 are offered. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee E. Pearson, Corbridge.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 26.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR CVENTRY.—Premiums of £150, £175, and £125, for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

NEWS ITEMS.

Change of Address.

Messrs. the Middleton Fire Clay Works, of Leeds, have transferred their London offices from 11 and 12, Finsbury Square, to 27, Chancery Lane, W.C.

The Excavation of Caerwent.

So far about one-half of the Roman city of Caerwent, in Monmouthshire, has been laid bare, the excavations having proceeded for upwards of ten years.

£1,500,000 Contract.

Messrs. Pauling and Co., Ltd., Westminster, have secured the contract for the construction of a dam in connection with the Bombay hydro-electric scheme, the total cost of which is estimated to be about a million and a half sterling.

The Royal Sanitary Institute.

His Excellency the Earl of Aberdeen, K.T., has consented to act as patron of the 26th annual congress of the Royal Sanitary Institute, to be held at Belfast from July 24th till 29th next. The Right Hon. Lord Dunleath, D.L., J.P., will be the president of the Congress.

Building Trade Activity in the Transvaal.

His Majesty's Trade Commissioner for South Africa (Mr. R. Sothorn Holland) reports, in connection with the development of the building trade in the Transvaal, that during the three months July to September last seven Transvaal municipalities approved plans of buildings to be erected at an estimated cost of £626,171, an increase of £233,383 over the cost of the buildings authorised in the previous three months.

Carpenters' Company Lectures.

Particulars of a course of lectures on the arts connected with building, announced by the Worshipful Company of Carpenters to be delivered in their Hall, London Wall, on Wednesday evenings, at 7.45, include in the list of lecturers such well-known names as those of Messrs. T. Raffles Davison, Henry Tanner, jun., Laurence A. Turner, Alfred E. Drury, A.R.A., Walter Cave, Arthur Keen, Noel Heaton, W. Bainbridge Reynolds, F. Hamilton

Jackson, and Prof. W. R. Colton, A.R.A. These lectures have been inaugurated by this Company to bridge, as it were, the gulf between their popular lectures and their highly technical ones on carpentry and building construction. The first lecture will be given this evening (January 25th), at 7.45 p.m., by Mr. T. Raffles Davison, the subject being "Truth in Craftsmanship."

New Barracks at Windsor.

The new barracks which have been erected at Windsor at a cost of £56,000, will soon be ready for occupation. The architect is Mr. H. B. Measures, F.R.I.B.A., Director of Barrack Construction. The building is an experiment with the cubicle system, which has long been advocated by many military men of the highest rank. It is replete with every modern convenience, and is greatly superior in comfort to the old barrack quarters.

The Metal Trades in 1910.

Messrs. William Jacks and Co., Metal Merchants, of 4, 5, and 6, East India Avenue, London, E.C., state in their annual report that the past year was an unsatisfactory one for the metal trades, as the production of most metals exceeded the consumption, and the result of the serious strikes in Germany and the United Kingdom brought about a heavy accumulation of stocks which only a trade boom can work off. The table below shows the highest and lowest prices per ton during the past three years:—

	1908.	1909.	1910.
Standard Copper	£65 5s 6d	£64 5s 4d	£62 5s 6d
Foreign Tin	£147 5s 11d	£154 5s 12d	£170 5s 14s
Foreign Lead	£15 5s 12d	£14 5s 12d	£13 5s 12d
G.O.B. Spelter	£22 5s 18d	£23 5s 21d	£24 5s 22d
No. 3 Middlesbro'			
Pig Iron	56/6 47/6	52/7½ 45/7	52/4 48/7½

TRADE AND CRAFT.

Sesame Self-opening and Self-closing Doors.

The Easton Lift Company, Express Works, Short Street, Southwark, S.E., announce that they have obtained from the holder the sole right to manufacture Carey's patent Sesame self-opening and self-closing doors. These doors open and close automatically as the person approaches and passes through. They are hung centrally, and work in an arc, edge on, so that it is impossible for any person passing through to get caught or jammed, the doors going away from you whichever way you go through. The automatic opening and closing represent a great convenience for ordinary passing in and out; but the advantage is enormously magnified in the case of hotels and restaurants, where waiters and waitresses with trays are constantly passing to and fro, and in the case of busy shops, where people go in and out burdened with parcels, they save the cost of a commissionaire. The Sesame, moving in an arc edge on, cleaves the air, and, unlike swing doors, does not cause a vacuum, nor does it, like them, vibrate when the wind is blowing. There is not a spring in the mechanism, pure mechanical balance and strength and simplicity of the parts ensuring perfect action and great durability. All the mechanism is under the platform holding the mats, and occupies a space about 8 ins. deep. The doors are supplied in several varieties of wood; and existing doors can be adapted at very little cost.

AN ATTEMPT TO ANALYSE THE TAJ MAHAL.*

BY ROBERT F. CHISHOLM, F.R.I.B.A., F.S.A.

The Taj Mahal, situated on the bank of the River Jumna, a short distance from Agra, is the tomb of Argamand Banu, the favourite wife of Shah Jahan, who constructed it in the year 1631. He himself passed away in 1658, and his remains lie beside those of his queen. The building stands on a platform 18ft. high and 313ft. square, with four minarets at the corners, each 133ft. high. The height of the façade in the centre is nearly 100ft. above the level of the platform, while the apex of the dome rises to nearly twice this height. The interior contains an octagonal cham-

ber in the centre about 50ft. across, with passages leading to four smaller chambers at the angles. The whole of the interior and exterior consists of pure white marble inlaid with agate, bloodstone, jasper, black marble, and lapis-lazuli in that form of Florentine mosaic known as "pietra dura." Perhaps there is no building in the whole world that has received such extravagant praise from travellers, and no building of which pictures, photographs, and models convey so poor an idea, the reason being

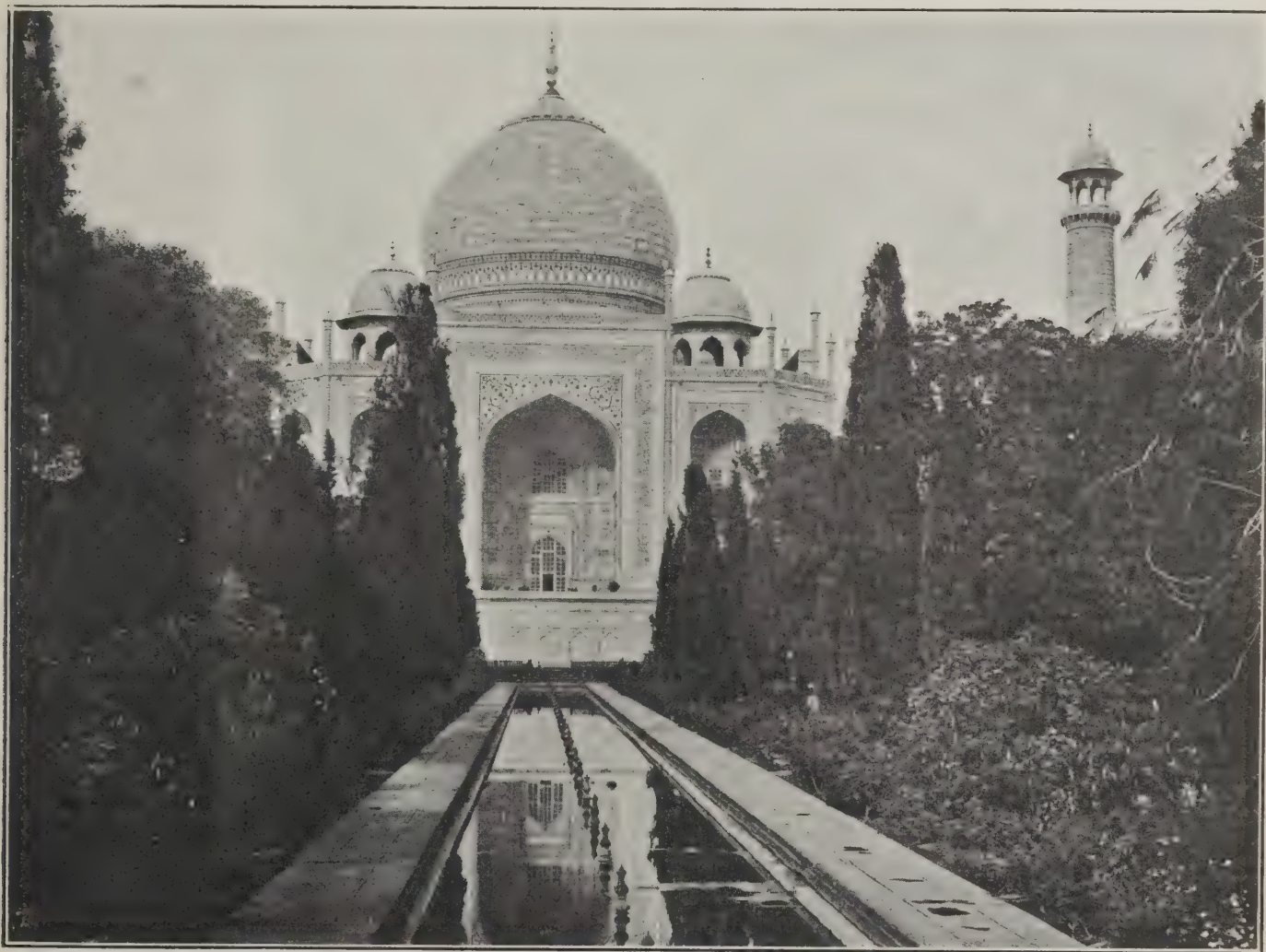
Other Buildings that Surpass it.

In regard to its architectural merits, buildings can be found in India surpassing it in every direction; thus, for size and boldness of construction the Taj falls far below the Gol Gombaz at Bijapur. This building covers a square of 135ft. 5in.; Santa Sophia, at Constantinople, covers a square of about 130ft.; St. Peter's, at Rome, about 126ft.; and St. Paul's, London, 95ft. In wealth of intricate detail and great delicacy of finish it is surpassed by the Jain temple at Dilwara, on Mount Abu in Rajputana; in size, unity, and symmetrical arrangement by the great Jumna

it; it is unlike anything I have ever seen." I went and found it was truly, as my friend said, unlike anything I had ever seen. When the view of it burst upon me I saw a translucent visionary object, part of the sun-bathed atmosphere, all-satisfying in its loveliness. For a while I stood gazing in the simple enjoyment of the scene, then, as the sense of keen pleasure gave place to a sense of curiosity, I determined not to move forward one step until I had solved, at all events in part, the secret of this almost unnatural effect, and how it came about.

The Illusion.

First, I observed that all the shadows were in a very high key; the lights on the dark foliage of the cypress trees were deeper than the deepest shadows on the building; again, the windows, which seemed at that distance simple frames,



THE TAJ MAHAL, AGRA, INDIA.

Musjid at Delhi; in constructive skill by the ingenious doming of the mosque of Sher Shah in the old Kila at Delhi; in magnitude and extent by the great Sivite Temple of Madura, South India; and in strict conformity to the canvas of pure architectural decoration by the Muntapum on the building known as Jehanghir's Mahal at Agra and the Bir Bul at Fatchpur Sikri.

I was expressing somewhat similar views to a lady friend who seemed to me to be indulging in rather extravagant praise of the building, when she said, "I understand exactly what you mean, but go and see the building itself. I cannot explain

opened into comparatively light, not dark chambers, while the entrance doorway looked like an ink-blot, seeming to mar the general harmony. I felt convinced that this effect was not intended, and looked for other inharmonious notes. These I soon found in the deep shadows of the subordinate cupolas on the roof. As my eyes became more critical, I detected the comparative coldness of the shadows above the roof as compared with those below; the shade of the great dome was grey, while the shadows of the recesses were of a warm amber colour. Everything above the parapet seemed cold and lifeless, while everything below sparkled

*Abstract from a Paper read before the Indian Section of the Royal Society of Arts, December 15th, 1910.

in the brilliant sunshine, suggesting tones of crimson, citron, green, and orange. Approaching the building, I found it to be in the centre of the large platform of white marble which cannot be seen from the entrance, but the roof, which was doubtless also intended to be of white marble, was covered with that dullest of all dull but useful materials, Portland cement—a deep-toned green-grey! The difference in the effect seems to justify the belief that the roof was intended to throw back on to the dome the maximum amount of reflected light, just as the marble platform on which the building stands throws back the maximum of reflected light on the lower part. The face of this platform, viewed from the gateway, appears to be part of the building, an intentional illusion, I believe, which adds to the general ethereal effect by the weakening of the shadows due to the distance between the foliage and the building.

Window and Door Openings.

Examining the windows more closely, I found that the comparatively light appearance was due to a regular pattern of white marble which acted as a white veil, and could not be perceived at a distance. As cost was no object, I cannot help thinking that if the effect produced was not intentional, the windows would have been filled by elaborate arabesqueing like the screen at Delhi or the Ahmedabad Palm Window. Tracery of this kind would have had a much richer effect, but, of course, it would not have toned the openings to that delicate warm grey. I found also the intensely black spot (the entrance which really opened into the building) to be without a blind or chick, though the two metal rings intended to hold it were in the lintel of the door. Mr. Havell, in his essay on the Taj and its designers, published in the "Nineteenth Century and After," says that this opening was originally closed by silver doors. If this is true, the door-hangings are probably in the frames still; the rings for the hanging of the chicks satisfied me, and I am sorry I did not look further. Again, the four corners of the building are cut off to a considerable extent to avoid the depth produced by simultaneous contrast. Lastly, the effect which would have been produced by mouldings and sunk surfaces in this particular style is here produced by black marble inlay, so that the general appearance is not unlike lace, and at the first glance gives the effect more of a drawing than of a real building. It is difficult to imagine that the attempt to secure the maximum of reflected light, the systematic heightening of all shadows on the façade and dome, the avoidance of strong contrasts, and the provision for planting heavy foliage around and before the building, were all the result of accident rather than the systematic working out of an artistic idea, and still more difficult to understand how, if that idea originated with the architect of the building, it was not carried out consistently to the finish, instead of being stopped at the point where, owing to the deep blue of the zenith, the strongest reflected light would be required. I do not intend by these remarks to disparage the architecture in any way. I am quite ready to admire the proportions and to admit that the Taj would be a remarkable building under any light and constructed of any materials. What I desire to point out is that the startling ethereal appearance is not due to scholastic architecture, and could hardly have originated in an architecturally trained intelligence, for such an intelligence is antagonistic to this principle of subordination, and delights in produc-

ing brilliant contrasts; it is rather an artistic thought, the idea of an artist, a man who loved light and could divide it into a hundred shades. The effect which the building produces on the observer leaves the artist's success beyond a doubt, for the man with the idea has portrayed materially the subtleties of pictorial values, which neither picture nor photograph can fix; in fact, he did for this style of art what Shakespeare did for the drama of his day, and the Taj will always be condemned or exalted in exact proportion to the perception of the idea.

A Glowing Estimate by Sir Frederick Treves.

Dr. Leitner has compared the Taj to a piece of lacework. "It appeared with its dark background of foliage, to float in the air; it was more like a dream than a reality." Bishop Heber said it was the conception of giants carried out by goldsmiths. The late Sir W. W. Hunter described it to me as "a stupendous jewel—not a building at all!" But perhaps the best description is that given by Sir Frederick Treves, one of the most recent travellers. "Everyone," he says, "who visits Argamand Banu's tomb for the first time approaches it with curiosity, tinged probably by a faint disposition to be hostile. So much has been written about this wonderful building, so much rhapsody has been lavished upon it that there is some suspicion of overpraise. The claim that it is the most beautiful building in the world is a claim that many at once resent. Its outlines are familiar enough from pictures and models, and it may be that they hardly warrant unrestricted ecstasy. The visitor proposes to himself to put sentiment aside and review the building critically . . . to submit it to a common-sense inspection, for he is inclined to believe the Taj Mahal to be a much overrated monument. He has, indeed, already imagined himself on his return home, giving to his friends evidence of his originality by asserting that as for the Taj he sees nothing in it . . . With the first sight of the Taj Mahal there comes only a sense of indefinable pleasure; it is no mere feeling of admiration, still less of amazement. No mere delight in a splendid building, because it does not impress one as a building. There is a sudden vision, and with it a sudden sense of ineffable satisfaction, as if in the place of a marble dome the garden had been filled with divine music. All intended criticism is forgotten; there is nothing that appeals to the judgment or that suggests the weighing of opinions. There is merely a something that touches the finest sense of what is tender, beautiful, and lovable—a white cloud, luminous, intangible, translucent! The secret of the beauty of the Taj Mahal lies in the great arched recesses or vaulted alcoves which burrow deep into the body of the building. These are throbbing with sensitive shadows, and they give the impression that the onlooker can see into the very heart of this gentle palace as one would gaze into the heart of a yellow rose, where leaf by leaf the tints become deeper, warmer and more living. There is ever a sense of something half hidden and half revealed of a tenderness which has deeper depths! . . . It is this abiding suggestion which makes the peculiar glory of the Taj a glory which is beyond the reach of any picture or any model. To many the Taj will be the most beautiful building in the world, while there must be few who would not acknowledge that it is the most lovable monument that has ever been erected."

ART AND REGISTRATION.*

BY H. GUICHARDE TODD, F.S.A.Scot, M.S.A.

The future of art in architecture, and the professional welfare of its exponents, are to a great extent in the hands of the present generation, and two policies are put forward for consideration as ameliorations of the present unsatisfactory state of affairs in art and professional practice.

Registration and Copyright.

The registration of architects, as has been proved by several plébiscites, is supported by the great majority of architects, who appear to consider that the reorganisation of the profession is necessary; and architectural copyright is brought forward by a section which professes to study more particularly the future of our art while protecting the interests of professional men. These policies may appear, at first sight, to be very similar, and leading towards the same end, but a closer study of their probable effects in practice, and more particularly on art, is worthy of the consideration of this society, especially as its members are probably the very men who will in the next generation have to practise under one or other of these policies, and maybe regulate their administration.

Sir James Mackintosh, the eminent lawyer and essayist of the earlier portion of the last century, said, "The description of liberty which seems to be the most comprehensive is that of security against wrong. Liberty is therefore the object of all government." The registration of architects means the ultimate government of the profession by the profession to ensure security against wrong, but it is not only in the personal protection of the members of the profession that the policy of Registration is worthy of consideration, and the probable effects of such a policy on art must be studied.

The Effect of Art.

Art in architecture is acknowledged by the majority of our most prominent architects to be in a very unsatisfactory state, and the introduction of an Architectural Copyright Bill at first sight appears to be a necessary measure for the protection of the personal property and standing of the architects. The author, however, shows, later in his paper, that he has no belief in its efficacy or its necessity.

The registration of architects would not necessarily make every building in our streets a work of art, but it would undoubtedly, in future years, prevent the utterly unqualified and ignorant man from practising as an architect.

Convincing the Public.

Architects may not advertise for their own personal benefit, but architects as a body can surely advertise the importance of their art by drawing public attention to it on every possible occasion. The Town Planning Conference has done much to convince the public of the importance of the architectural profession; but it must be remembered that the subject of Town Planning owes its present prominence very largely to the fact that it has been brought to the public notice through political channels, the Town Planning Bill having been commented on by every journal of importance, and the subject having all the prominence of a political measure. It is obvious that the introduction of a Bill for the Registration of Architects would also attract notice and convince a large proportion of the general public of the importance of the architectural profession.

*Substance of a paper read to the Guild of Architects' Assistants on January 10th.

In the medical profession the Diploma of Public Health (D.P.H.) held by so many doctors has convinced the public that public health is made a serious study by medical men; the profession is looked up to, and the public interests in that sphere are felt to be safe in its hands. The institution of a diploma in civil architecture might well fill a corresponding place in the architectural profession, and have the same effect, in convincing the

public that architects are solicitous for their well-being by endeavouring to give them artistic and suitable as well as sanitary and well-built buildings, but such a diploma could be of little use so long as the professions of stockbroking and architecture are interchangeable.

Public approbation is necessary to the progress of art, but the public cannot be forced to appreciate art and architecture. Therefore, it must be led to that apprecia-

tion; and the first step likely to convince at least a large section of the public of the importance of architecture would be the initiation of the policy of Registration, and the consequent access of dignity and standing in the public eye which that measure would confer on the members of the profession.

Gilbertian Position.

It is amusing to find that the first great proposal for many years, professedly in



ENTRANCE TO THE CROSS BATH, BATH: A FINE EXAMPLE OF EIGHTEENTH-CENTURY ARCHITECTURE
BY THOMAS BALDWIN (C. 1790.)

the interests of architects, should be so obviously in the interests of the legal profession, and such a Gilbertian position can only bring ridicule on architects, and give the public cause to believe that architects cannot manage their own affairs. Under Registration, the names of practitioners guilty of the malpractice of unjustifiably copying plans of elevations to the detriment of their professional brethren could be removed from the Registration list, and this action would be a parallel to being struck off the rolls in the legal and medical professions. Lawyers and medical men have wisely kept the management of their own affairs in their own hands, and it cannot be said that it presses unfairly on the members of these professions, as only in the case of aggravated malpractice is the power of ejection exercised.

Gilbertian Proposal.

As architects can be the only judges of what constitutes infringement of architectural design, the elevation of some eminent architect to the Bench to deal with all cases under the Architectural Copyright Act would appear to be necessary, in conjunction with an arrangement whereby architects might take silk and plead at the Architectural Bar on matters of Art. This may appear to be purely fantastic, but, given an Architectural Copyright Bill to protect originality in Art in Architecture, it appears to be a logical necessity.

An Architectural Copyright Bill in conjunction with an Architects' Registration Bill is more attractive, but Architectural Copyright under existing conditions does not appear to be in the best interests of architectural progress. Registration, on the other hand, would appear to tend towards architectural progress.

Education and Ideals.

True originality in architecture must always be a fresh and rational interpretation of structural truths and proportions, and can only be the outcome of the study of those truths and principles, and any sudden and violent demarcation from these axioms of building, or their rational developments, shows the untutored and uneducated architect.

Architecture has great ideals, and the only logical method of attaining those ideals is through the medium of well-applied study; yet, under present conditions, it is possible for any person to practise as an architect without study or training of any kind, and leave vulgar fripperies as heritages and a reflex of the architectural art of this present generation.

The Registration of architects, by binding the members of the profession together, by enforcing a statutory qualification, by emphasising the necessity for the study of

architecture as an art, and through the power it would have as a united and definite profession, able to speak with one voice, could only have the effect of furthering this ideal of carrying our tradition forward and proving to future critics that this generation was solicitous for the well-being of that art which is undoubtedly the truest index to the culture or civilization of any age. Registration is not an ideal policy; but the necessities of the case are such that there appears to be no alternative.

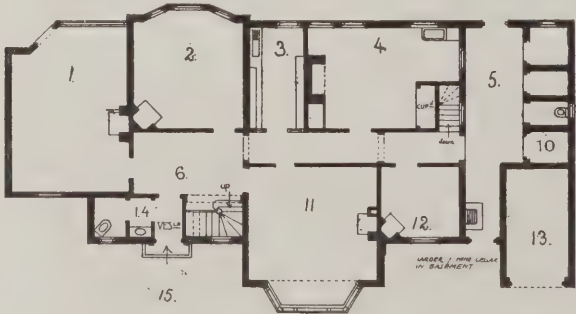
Italy, Spain, Russia, several of the United States of America, the Transvaal, and some of the Canadian Provinces have successfully adopted Registration, while Germany and Hungary compel all public architectural officials to have a Government Diploma, and from none of these countries do we hear that the spirit of design in architecture has died in consequence.

Registration stands for statutory qualification, which depends upon architectural education, and architectural education, in whatever light we view it, must appear the most important subject that can engage the attention of the architect, and it is most important that he should now support the policy of Registration if he wishes architects to control the necessary qualifying examinations.

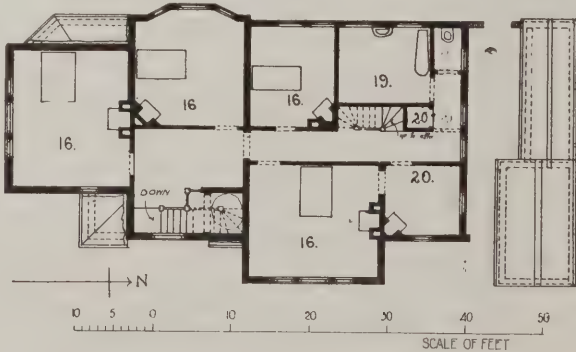
The progress of art depends upon public support, and the public is always impressed by strength. It has been said, "If massive columns are close to each other, they appear more massive still; and slender columns, when wide apart, appear slenderer still." It is surely easy and natural for architects to apply this architectural maxim to their professional affairs. Every architect is a column in the structure of the profession, and if architects bind themselves together under Registration, in the interests of their art, as well as in the public interest, the tendency will be for the public to respond by showing appreciation of architectural refinement and excellence, and condemning the vulgar and inartistic.

HOUSE AT MOOR GREEN, BIRMINGHAM.

This house, built from designs by Messrs. Buckland and Haywood-Farmer, of Birmingham, is a quiet example of English domestic work, free from affectation or eccentricity. It is built of red bricks, and roofed with tiles. The following is the list of rooms, numbered on the plans below:—Ground floor: 1, drawing-room; 2, study; 3, pantry; 4, kitchen; 5, yard; 6, hall; 10, coal; 11, dining-room; 12, servants' room; 13, motor-house; 14, lavatory. First floor: 16, bedrooms; 19, bathroom; 20, dressing-room.



Ground-floor Plan.



First-floor Plan.

HOUSE AT MOOR GREEN, MOSELEY, NEAR BIRMINGHAM

THE CEMENT INDUSTRY IN GERMANY.

H.M. Consul-General at Hamburg (Sir W. Ward), writing with reference to the cement industry of Germany, says that in the autumn of 1909 the German cement factories came to an agreement to raise the minimum prices of cement for export; but this agreement lasted for only a very short period, and export prices sank to their former level as soon as it became evident that the negotiations of the German groups with regard to the home trade would not lead to a satisfactory conclusion. In November, 1909, several of the German groups were dissolved, and this is said to have been the cause of much excited competition in Berlin. Large contracts were then made at prices equal to the cost of production. The Berlin group and the central German Union of Cement Factories were unable to agree, owing to the exorbitant demands of the newly founded factories.

These circumstances, combined with the competition of Belgian cement in Westphalia and in the Rhine Province, led to a general reduction of prices. Then came the general strike in the building industry in the summer of last year, and the results revealed by the reports of those works which closed their balances in June were far from satisfactory. On the other hand, the export business has been brisk, especially during the last few months; but this activity has not been sufficient to relieve the factories of the large stocks which had accumulated, more especially in central Germany.

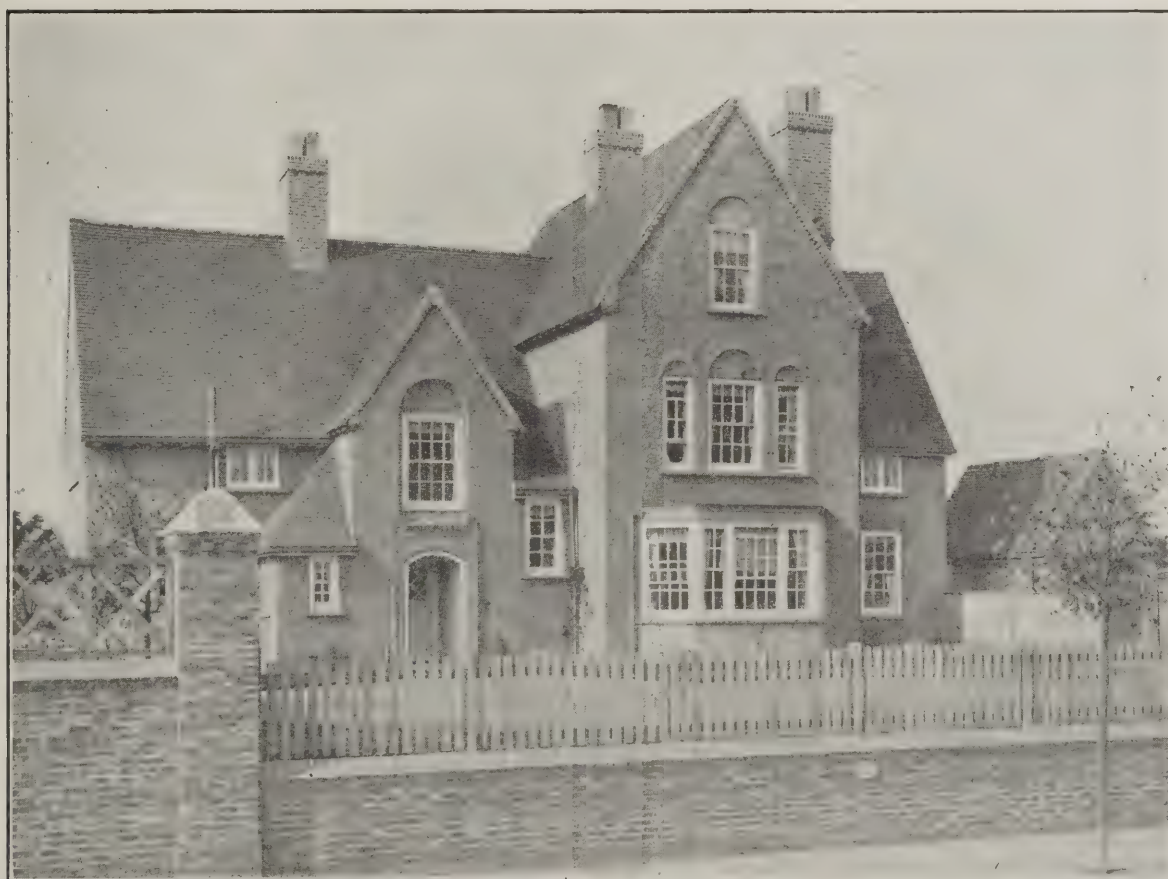
In spite of this unfavourable state of the industry, the number of new factories has still further increased, a circumstance which for a long time deferred the realisation of an agreement among the German groups. After protracted negotiations an agreement was reached in November; but a considerable number of the factories have not accepted it.

The prospects for the year 1911 are not considered as encouraging, and the only favourable feature in the situation is thought to be that little money is available for the establishment of further new undertakings. The demand for cement, however, remains large, and is probably increasing, and as the cement trade abroad is also improving, it is hoped in Germany that an improvement may be anticipated towards the end of 1911.

[The value of such consular reports as the foregoing is unquestionable; and in time, as such reports become more regular and systematic, they must result in considerable all-round benefit to commerce and industry.]



Garden Front.



Entrance Front.

ENQUIRIES ANSWERED.

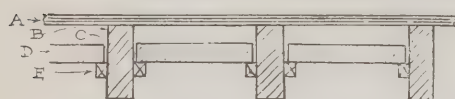
N.B.—Owing to the very great increase in the number of enquiries received the Editors desire to give notice that answers to the following enquiries can no longer be undertaken:—

- (1) Enquiries about buildings to measure in particular towns and districts.
- (2) Enquiries embodying questions which have been set in examination papers.
- (3) Enquiries which ask for or require the preparation of special designs as part of the answer.

Open Joisted Floor.

H. E. C. (LONDON) writes: "In building a small country house it is desired to show the first floor joists as beams in the ceilings below. Do you think that an arrangement as shown in sketch would be suitable and satisfactory, having in view the desirability of rapid and economical construction?"

—The method of construction suggested should prove satisfactory, though it hardly seems necessary to use zin. partition slabs, as the makers of the "Mack" partitions also produce a thinner ceiling-slab, toughened with cocoanut fibre, which will be much lighter and equally efficacious.



A: IDEAL FLOORING LAID FOLDING WITH SPAYED HEADINGS
B: 7"x24" DEAL JOISTS
C: JOINTS POINTED IN LINE AND PAIR
D: 2" MACK PLASTER PARTITION SLABS HEAD-
ING JOINTS POINTED IN KEEN'S CEMENT
AND DISTEMPERED ON UNDERSIDE
E: 1"x1" DEAL FILLETS PLANTED ON JOISTS

cious. Uralite sheets have also been used. The conduction of sound, however, is the chief objection to these open joist floors, and strips of carpet felt, deafening quilt, or similar substance laid between the joists and the flooring above effect an improvement in this respect. The appearance of the ceiling may be improved at slight extra cost by using moulded fillets instead of 1in. x 1in. square.

G.

Erecting Walls to Prevent Overlooking.

"NEIGHBOUR" writes: "A buys a piece of land and builds a house. B buys the next piece and builds two houses. A is annoyed and has built a 14 in. wall 16ft. high to prevent B from overlooking his lawn, garden, and yard. A now wants to erect something 16 ft. high falling to 5ft. to prevent B from overlooking him in the front. Is it possible to build a concrete wall, say, 6 in. wide, for this height?"

—Surely A is a little unreasonable, and will be in a worse position after he has built this awful wall than he now is? He will decrease the light to his own front windows as well as build a monstrosity for his own future contemplation. Would it not be better to plant some tall evergreen shrubs to mitigate any nuisance there may now possibly be? I suggest *Thuja Lobbii* as a suitable shrub to plant about 4 feet apart to grow together into a close hedge; at 5 ft. high good plants will cost 24s. a dozen, and at 7 feet in height they only amount to about 40s. per dozen. If A is determined to build the wall he can hardly do better than construct it of reinforced concrete—a

material which can be safely built to a much greater height with a total thickness of less than six inches. Before building it, however, I strongly advise A to consult his title deeds in order to find out whether there is not some restriction as to erections in front of his building line which would prevent an obstruction such as is now suggested. I also advise him to find out whether B's windows have been in existence more than 19 years (if so the "Prescription Act, 1883," probably prevents the erection of this wall); and, further, he must remember (if his house is in an Urban District) that the Local Sanitary Authority have powers under the "Public Health Act, 1888," with regard to buildings in advance of the existing buildings in a street. F.S.I.

Objectionable Board on Boundary Line.

"ANSELL" writes: "Kindly give me your opinion on the following: (1) B is owner of house and has broken out a window, glazed with leaded lights, which looks on to the space left between B's house and A's house when he builds. Directly after, A put up a board exactly on B's boundary; can A do this? Is B entitled to look upon half of the space between, or the full space that the Estate insists must be left between the two properties? (2) When A builds, what about his right of light looking on to B's property? (3) Usually it is understood that B should have built 1½ yards from his building line, and A would have to do the same, but the Estate allowed B to build right up to his building line, therefore A will have to leave the 3 yards."

—You would do well to look up the "Building Regulations" and "Sale Conditions" under which you purchased your plot of land—it is very usual to insert in such documents a stipulation that no right of light shall arise out of the development of the property which is being cut up into building plots.

I am of opinion (1) that A is quite within his rights in erecting the board which B finds ugly, and no doubt objectionable—he has put it up upon his own property and B cannot object. Personally I always prefer to accept a small acknowledgment rental in such a case as this, but one cannot be compelled to take that course.

(2) A will be in precisely the same position when he builds his house, as B now is placed, and it will be competent for B to prevent the acquisition of a right of light by erecting a screen upon his own property if he so chooses.

(3) I do not see how the side building lines affect this question, but I must express some doubt as to whether the action of the vendors of the original Estate in allowing one purchaser to infringe the regulations can bind another purchaser. F.S.I.

Defective Church Acoustics.

"SONOROUS" writes: "Complaints are made about the acoustic properties of a recently erected church. (1) Is the introduction of wires across the springing of the roof of much value? What kind of wire, and what gauge should be used, and at what intervals? Is there any better method of treatment? (2) What is the best form of sound board to use above the pulpit?"

—The smallest effective circular sound-board would probably be one forming the base of a cone with an apex of 30 degrees at the speaker's head, the height being

6 to 10ft., according to local circumstances. Wires across the springing of the roof have frequently proved effective for breaking up echoes. They should be of galvanised steel if gas is used, but may be of hard brass if electric light is used, say about No. 16 to 18 gauge (S.W.G.), with a sag in the centre of 3 to 6in. It is impossible to have the wires perfectly horizontal, and the less sag the greater strain. They are generally placed from 3 to 6ft. apart, but until the principles of acoustics are fully understood all such work is in the way of experiment.

HENRY ADAMS.

River Landing Cut Through Retaining Wall.

H. S. writes: "The attached tracing [not reproduced] shows proposed new landing stairs from river to be cut through an existing wall; also the proposed concrete retaining walls for earth and water. Are the proposed retaining walls of sufficient thickness and good design? If not, a sketch cross section showing a wall suitable for the purpose will be appreciated."

—A retaining wall with vertical face and set-offs at the back is the least economical section, as the centre of gravity is thrown forward to the face, and the leverage for

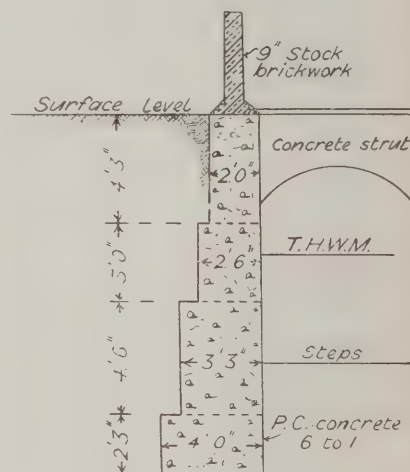


FIG 1

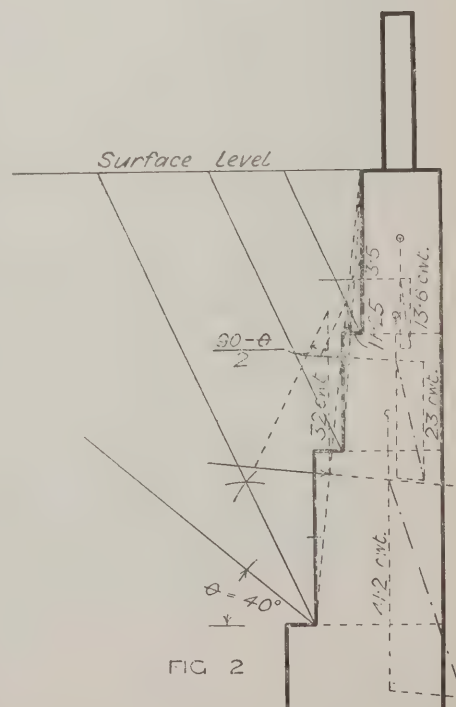


FIG 2

stability is reduced. The new walls should be bonded into the existing wall, and if an arched strut were thrown across the passage-way they would be greatly strengthened. The arch might be 2 ft. wide and 2 ft. deep at the centre, 2 ft. back from junction with existing wall, 18 ins. rise (as in Fig. 1), and filled level on top with saddle-back. It should be put in at the same time as the walls to form a homogeneous structure. The granite steps should be built in $4\frac{1}{2}$ ins. at each end, so as not to depend upon the earth filling for their support. The stability of the new wall, apart from the strut, is shown graphically in Fig. 2. The calculations are as follows:—At A,

$$\frac{W}{A} \pm \frac{M}{Z} = \frac{13.6}{2} \pm \frac{13.6 \times \frac{1}{8}}{\frac{1}{8}(1 \times 2^2)} = 6.8 \pm 3.4 = 10.2 \text{ cwt.}$$

per sq. ft. compression, and 3.4 cwt. per sq. ft. compression. At B,

$$\frac{W}{A} \pm \frac{M}{Z} = \frac{23.5}{2.5} \pm \frac{23.5 \times \frac{3}{8}}{\frac{1}{8}(1 \times 2.5^2)} = 9.4 \pm 15 = 24.4$$

cwt. per sq. ft. compression, and 5.6 cwt. per sq. ft. tension. At C,

$$\frac{W}{A} \pm \frac{M}{Z} = \frac{43}{3.25} \pm \frac{43 \times 1\frac{1}{2}}{\frac{1}{8}(1 \times 3.25^2)} = 13.2 \pm 36.6$$

= 49.8 cwt. per sq. ft. compression and 23.4 cwt. per sq. ft. tension. The only serious stress is the last item, where a tension of 23.4 cwt. per sq. ft. is shown on the inner edge at the top of the set-off, but good concrete ought to stand this.

HENRY ADAMS.

Architects' Assistants Under Government.

"EXPERIENCE" writes: "Please give a list of Government appointments open to architects' assistants, and any other available information, or state where particulars may be obtained."

—This question has been frequently answered in the past, and we must ask readers who desire such information in the future to refer back to previous issues.

The number of architects in the service of the Government is quite small. They are employed chiefly in connection with the Office of Works, Admiralty, War Office, Post Office, Local Government Board, Board of Education, and Home Office. The openings for architects' assistants are not of frequent occurrence; but the Civil Service Commissioners, Burlington Gardens, W., would probably be able to give full information with respect to these posts.

Seaside House Cesspool.

"INTERESTED" writes: "I am about to take a house at the seaside, attached to which is a cesspool 125 ft. away in clayey marl, 1,750 ft. from the sea shore, where the land forms a vertical face 80 ft. high. The cesspool is constructed of 9 in. brickwork built dry, with vertical joints open $\frac{1}{2}$ in. for a height of 6 ft. 9 in. from the bottom, and the upper part in cement mortar with a backing of clay puddle 12 in. thick. The pit is 7 ft. diameter by 15 ft. deep, with three rows of agricultural pipes 30 ft. in length each and 6 in. diameter, spread at 120 deg. apart horizontally, and attached to the dry brickwork to assist the soak away."

"The pit is sealed in at the top, has a ventilating pipe at the side furthest away from the house, and a fresh air inlet on opposite side. The 6 in. house drain is disconnected from the cesspit by means of a reverse action interceptor with air inlet. The drains connecting to the house are of the very best class, with gullies, inspection chambers, traps, etc. Up to the present the whole system has been used for foul water drainage only—now a w.c. and a bath have been placed in

the house and connected up to the system. I should like to know whether this arrangement will be perfectly safe."

—If the soil has proved to be of a sufficiently porous nature to allow the soakage from the cesspool to pass away, it is probable that it will continue to do so, but any such arrangement for the disposal of unpurified sewage is generally considered unscientific and dangerous. Septic action will undoubtedly take place in the cesspool, but only the preliminary stage brought about by anaerobic bacteria, which break up the solid organic substances contained in the sewage but leave an effluent of turbid character. To complete the purification the addition of a filter is requisite. If the inlet to the cesspool is above the usual level of its liquid contents the septic action will be interfered with by the splashing of sewage breaking up the scum in which the colonies of bacteria work, but this may be avoided by prolonging the inlet inside the cesspool to discharge below the water level.

As to the likelihood of foul air and vapours being drawn up into the house from the soil, the cesspool is sufficiently distant to render this improbable, but liquids will always flow in the direction of least resistance, and there is at least the risk that some circumstance in the arrangement of strata may direct them towards the house. If by any means a fall of about five feet can be obtained, and there is either space on the site for surface distribution or means of getting rid of the purified effluent into some water-course or the sea, a simple disposal system such as Farrer's septic cesspool and filter or Adamsez "non-septic system" would be the best treatment; but if this is impossible and a watertight cesspool must be adopted, this should be of brickwork rendered internally in cement or asphalted and surrounded by clay puddle; of sufficient capacity to hold on a liberal estimate 3 months' flow. The arrangements for ventilation described appear satisfactory, but periodical emptying would be required, and a float and indicator to give notice of the need. A pump for raising the contents is desirable. G.

Truss for 60ft. Span.

"DESIGNER" writes: "Please give your opinion with respect to the stability of a roof of which line diagram is enclosed [not reproduced]. I do not think it sufficiently rigid, as it is liable to buckle unless it has very large connections. Assuming 20lb. per sq. ft. on incline for slates and steel purlins, and 30lb. per sq. ft. for wind, there will be a load of 5.5 tons on an unsupported length of 18ft. of truss back. As this member is only a 7in. by 4in. R.S. joist, I think the deflection will be too great."

—The roof truss submitted, having only two bays in each rafter, is not suitable for so large a span as 60ft., especially as the purlins are distributed along the rafters between the points of support. In "The Practical Designing of Structural Ironwork" (Spon, 8s. 6d.) a detail design and calculations are given for a roof truss, besides much other useful matter. Many types of roof trusses are shown that would be suitable up to 60ft. span, but all have four bays in each rafter.

HENRY ADAMS.

Roof Truss Diagram.

W. (HARROGATE) writes: "Kindly advise with respect to enclosed $\frac{1}{2}$ in. detail of a roof truss and frame diagram of same [not reproduced]. I find it difficult to set

up the stress diagram, and I should be much obliged if you would tell me how this should be done, as I am anxious to find out if the sizes of the timbers given are strong enough."

—The design submitted shows a very imperfect type of truss. There must be a king-bolt or strap in the centre before any stress diagram can be drawn. The lower angle braces are of no value except for giving a bearing surface for the load, which might be equally well taken by the principal rafters if the feet are properly cut and supported. The weak part will be under the lower purlins, where the central bracing joins the principal rafters. The stress there will be such as to require a section about 15 in. by 12 in. for the principal rafter, unless there is an additional brace put across the joint strengthened by a substantial steel plate along the underside to connect the various parts.

HENRY ADAMS.

Sewage Purification for Private House.

L. P. (NEWPORT) writes: "Will you please give me your expert advice on the construction of a septic tank as shown on the enclosed tracing [not reproduced], and your opinion of its efficiency, and whether perfectly satisfactory results would be obtained? It is proposed to be used for a house with an average number of six inmates. Two w.c.'s, two lavatory basins, one bath and one sink would flow into the tank, and rainwater drains would not be connected to it. Would filter No. 1 be entirely free from smell?"

—The purification of sewage is not yet an exact science, and perfect results cannot be hoped for unless the installation is designed by an engineer fully acquainted with that branch of his profession, after an inspection of the site and careful consideration of the numerous local factors which will affect his decision as to the best method to adopt.

The design submitted will certainly not prove satisfactory. The septic tank will be more efficient if made 5ft. long and 3ft. wide. If the cover is placed adjoining one of the walls instead of over the centre of the tank it will facilitate entry if desired at any time. Filter No. 1 would merely act as a mechanical strainer, and when first installed would doubtless be effective in retaining a large proportion of the finely divided solid matters in suspension, but it would soon become choked up and could not easily be cleaned. It would probably always smell very badly, and in an installation of this character it is better to omit any provision of the sort and to allow the septicised sewage to flow direct to the aerating filters. The proposed method of distributing the sewage on the filters would result in the whole of the sewage being applied on the very small area immediately under the perforated pipes, consequently the filter would be choked up and thus become inoperative. To distribute the sewage evenly over the whole area, a Stoddart's distributor, consisting of a perforated tray with drip points under, might be employed, provided that the plant is not yet to be situated in a position where the exposure of the highly smelling septic tank effluent on the tray might prove a nuisance. An alternative would be to fix a tipping trough which would, when full, tip over and eject the sewage along "ladders" whereby it would be applied more or less evenly over the surface of the filter.

The 2in. dia. vertical pipes are apparently intended to act as ventilators, but in order to be effective they must be lengthened so as to connect the under drains with the open air. The perforated draining tiles on the floor of the filter should be laid close together so as to cover the whole area and permit an adequate supply of fresh air to the underside of the filter; or in the alternative a false floor should be constructed, giving about 2in. air space.

The proposed depth of 2ft. 6in. for the filtering medium is not sufficient; it must

be increased to at least 4ft. or 4ft. 6in. The quantity of filtering medium required will depend upon the degree of purity required in the effluent, which in turn depends to some extent upon where it is proposed to be discharged. The size shown, 7ft. by 4ft., will probably do if the filter is made 4ft. deep, although 4ft. 6in. would be better. From a structural point of view, the proposed details of construction will be satisfactory.

HENRY C. ADAMS.

Stress Diagram for Roof Truss: Green Deposit on Brick Walls: Reliable Roof Covering.

X. (LONDON) writes: "I shall be much obliged if you will kindly answer the following questions: (1) What is the correct way of drawing the stress diagram for the lantern of the roof truss—as enclosed diagram [not reproduced]—so as to determine the reactions at the points 3-4 7-8, caused by the weight of the lantern? I have drawn out the diagram several times, but find it impossible—with the loads taken, and which I wish to retain—to make the point 26 in the stress diagram fall on the line 4-7. Assuming a line somewhat as 4-7 to be correct, the rest of the diagram works out with little trouble.

"(2). In the swimming hall of some public baths recently built a green removable deposit forms in places on the red brick walls above the glazed brick dado. Do you think that two coats of washable distemper would remedy this?

"(3). Could you let me know some of the cheapest reliable forms of external roof covering for a hall, pitch 25 deg.? Appearance is of secondary importance, as the roof is not visible from a main road."

—(1). Querist has drawn one of his loads to the wrong scale, and thus has been unable to make the diagram close properly; he has also taken the weight of the vertical side of lantern as acting at the top instead of the bottom. The frame diagram of lantern light will be as Fig. 1, and the stress diagram as Fig. 2, giving the two reactions and stresses in the upper portions of the principal rafters. The frame diagram of main truss will be as in Fig. 3, and it will be seen that the reactions from the lantern are taken as loads on the main truss. The stress diagram, Fig. 4 may be easily worked out, using a sub-

stituted member a-b to find point 19, and the stresses found in the upper part of principal rafters must be added to those produced by the weight and wind on the lantern light as previously found. This is the best method to adopt in the case of a complicated truss, but in a simple truss such as this the stress diagram may be worked direct from the complete frame diagram as shown in Figs. 5 and 6.

(2). The "green removable deposit" on the red brick walls of the swimming hall appears likely to be a growth of moss due to damp brickwork in a warm moist atmosphere. Silicate of soda would probably be more effective as a wash than distemper, but the writer has had no experience of it for this purpose.

(3). It depends upon what is understood by reliable, and whether the roof covering is for a temporary or permanent building. Useful information might be obtained from firms manufacturing or selling Willesden roofing, Ruberoid, Vulcanite, Jodelite, Uralite, etc.

HENRY ADAMS.

Strength of Roof.

AMATEUR (CARNARVONSHIRE) writes: "I should be obliged if you would kindly give your advice re enclosed sketch of roof [not reproduced]. The proportions of the rooms are not happy, and the height cannot be increased. I feel that an ordinary principal in the middle of the room would not look very well. I suggest a roof formed as sketch, every rafter forming a rough principal, and plastered on the soffit. I should like to have your opinion on the strength of same, and as to the thickness of the walls. Could the scantlings be safely reduced?"

—The proposed scantlings and framing of roof will be just sufficient if the building is not in an exceptionally exposed position. If it is, the rafters should be increased to 8in. by 2in., or 7in. by 2½in. The walls cannot be reduced in thickness.

HENRY ADAMS.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

The annual dinner of the Leeds and Yorkshire Architectural Society was held at the Queen's Hotel, Leeds, on January 12th. The chair was taken by the President (Mr. S. D. Kitson), who was supported by Lord Airedale, Mr. E. Guy Dawber (vice-president of the Royal Institute of British Architects), the Lord Mayor of Leeds (Mr. W. Middlebrook, M.P.), Mr. Rowland Barran, M.P., Sir Nathan Bodington, Mr. P. Worthington (president of the Manchester Society of Architects), and others.

Lord Airedale submitted "The Royal Institute of British Architects." He was glad, he said, to see such beautiful examples of street architecture as could now be seen in Infirmary Street, East Parade, and Park Row, which were meeting the necessities of a great and smoky town.

Mr. E. Guy Dawber, V.P.R.I.B.A., replying to the toast, said they must educate their young men up to the highest possible pitch of attainment. The recent Town-Planning Exhibition organised by the Institute showed to the people who had never before realised that architecture was of any use, that good architecture, open spaces, and broad streets not only added to the health and comfort of the people, but were a national asset. Mr. John Burns truly said, "Mean streets make a mean man." The people who were brought up in dismal rows of dreary houses must have a dismal and dreary outlook on life.

Mr. H. S. Chorley proposed "The City of Leeds." He believed, he said, the bonds which united the Corporation with the architects of the city would be strengthened by the recent Town-Planning Act. With regard to the state of the city, people hardly realised the difficulties that confronted the immediate predecessors of the present generation. Seventy years ago Leeds was only a small town, and the rulers of that day were probably not capable of coping with the mushroom growth which they had not anticipated.

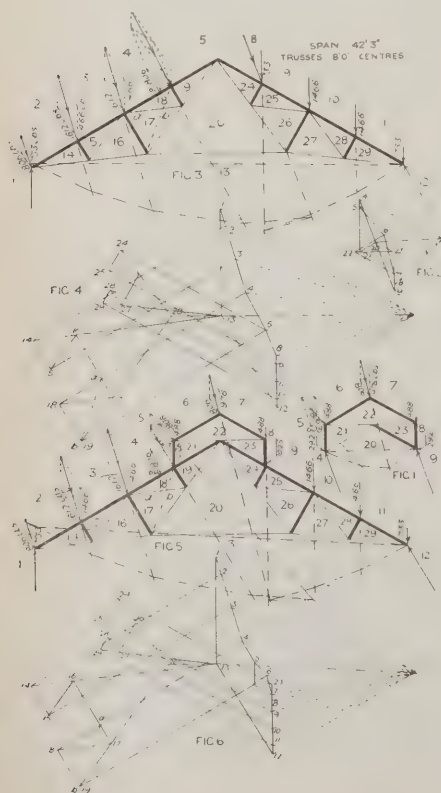
The Lord Mayor, in reply, said theirs was a profession which combined in an especial degree the practical and the artistic. With regard to smoke, he said that smoke generally meant prosperity, and that prosperity would lead to a greater and deeper culture, which would give greater opportunities to the architects. He trusted that the commercial prosperity upon which they were now entering would make itself felt in the architectural profession.

Sir Nathan Bodington submitted the toast of "The Leeds and Yorkshire Architectural Society." Architecture had the great advantage, he said, that it was the most democratic of all the arts. If the democracy was ever going to take art home to itself in any serious sense, it would be in the form of architecture. Painting was the art of an age in which the wealthy were the patrons. Music was essentially the art of the middle classes, but architecture, which Goethe called dumb music, gave harmonies in stone or other material which were rendered permanent, were erected generally on the larger scale at the public cost, and were there for all, rich or poor, educated and uneducated, to see and enjoy. In that town planning to which so much reference had been made it seemed to him that we already saw a promise of a better future. If that were to be so, they needed the help of the architectural profession.

The President, in responding, said that the Corporation of Leeds had anticipated the Town-Planning Act, and had been engaged in a stupendous work in the unhealthy areas, and had done it in a most wonderful way. With regard to smoke, he said they looked to the enormous development of electric power to clear the atmosphere of the big manufacturing towns.

Lord Airedale interposed a further remark on smoke production. The number of houses in Leeds, he said, was close on 100,000, and it was calculated that the weekly consumption of coal would average 4cwt. per house per week. So that the houses of Leeds were consuming 20,000 tons of coal per week, whilst at their works they consumed only 1,000 tons. It was in the houses that the great nuisance was developed. Therefore, it was entirely the fault of the architects. There were means by which the production of household smoke could be materially reduced.

Mr. J. S. R. Phillips, responding to the toast of "The Guests," which had been proposed by Mr. W. H. Thorpe, suggested amongst forthcoming work for the architects a new house for the Lord Mayor, whose present rooms were inadequate to the dignity of the position. With regard to the point that architecture was a democratic art, Mr. Phillips said the beautiful architecture of the Continent was due rather to despots and tyrants than to any public bodies. He referred to the absence, from the speeches that evening, of any mention of the Copyright Bill which would come before the new Parliament, and he criticised some of its provisions as to architecture.



BUILDING INTERESTS IN THE
NEW PARLIAMENT.*Building By-laws, etc.*

The Corporations of Gloucester, Belfast, Halifax, Rotherham, Luton, and St. Helens, and the Hebburn Urban District Council, each seek to lay down what shall be the minimum area for habitable rooms. In the case of Gloucester, Northampton, Halifax, and Rotherham, the clause reads: "Every new dwelling-house shall be provided with at least one living-room with a floor area of not less than 115 square feet, and one bedroom with a floor area of not less than 110 square feet; and no bedroom or other habitable room shall have less floor area than 70 square feet." Luton and Hebburn each ask that no other habitable room shall have a less floor space than 90 square feet; whilst St. Helens asks for one living room of 132 square feet, one bedroom of 110 square feet, and other rooms of not less than 70 square feet. Several authorities, including Gloucester, Newcastle-on-Tyne, Coventry, Luton, and Belfast, have provisions dealing with iron, steel, or reinforced concrete buildings. They provide for persons desirous of erecting such buildings making application to the corporation and sending complete plans, and the Corporation may issue such general rules as they think necessary.

Street Works.

The Luton Corporation has an ambitious programme for further improving the town, and asks for authority to spend £55,000 on the erection of a town hall and municipal offices, £12,000 on public baths, and £3,500 on improving and extending the market. The Hebburn District Council wish to construct a new street, and to widen School Street, at an estimated cost of £3,300. Rotherham Corporation have submitted an estimate of £149,650 for land and street works, £10,000 for the construction of a public hall, £34,000 for permanent street paving, and £5,000 for the enlargement of the dust destructor. Northampton Corporation also contemplate the widening of Bridge Street, South Bridge, and Cotter End, at an estimated cost of £70,000. For the purchase of land and construction of street works the Halifax Corporation ask for £48,560. The Port of London Authority seek to acquire compulsorily certain houses and premises in Savage Gardens, Trinity Square, and Muscovy Court in the City of London, including the premises known as Muscovy House, so as to enable them to erect offices, etc. The proposed scheme involves the stopping up of Muscovy Court. The Hornsea Urban District Council ask for authority to enclose the promenade gardens and to make arrangements for meeting the cost of sea defence works. Amongst the proposals of the Chiswick Urban District Council is one for the construction of an embankment to make a promenade along the Thames, for which £34,500 will be required, whilst a sum of £16,000 is set down for street improvements. The Aberdare Urban District Council ask to spend £4,000 on street improvements, £9,500 on bridge works, £14,500 on public libraries, £4,700 on recreation grounds, and £3,000 on a dust destructor. Coventry Corporation contemplate a big improvement which includes the widening of Leicester Street and the making of a new street. The whole scheme is estimated to cost £160,000. Hull, amongst other things, wants to spend £22,000 on the construction of tramway buildings, and Belfast £119,000 on flood prevention works and £156,000 on street works.

Town Planning.

The London County Council, in their General Powers Bill, have a most important measure, inasmuch as they seek powers to develop and use or let on lease for the purpose of development on the lines of a garden suburb any portion or portions of the White Hart Lane Estate. It will be remembered that a considerable time ago the London County Council purchased a big tract of land at Tottenham for housing persons of the working class, but a good deal of the estate has not been developed. Provisions are included in the Bill exempting from any local by-laws or provisions in force in the area the buildings and roads on that part of the estate which may be developed as a garden suburb. Power is also included to enable the Council to provide gardens, recreation grounds, buildings and facilities and apparatus for games for the use of the inhabitants of any dwellings on the estate, and to make charges for the use thereof. Part 10 of the Bill promoted by the Newcastle-on-Tyne Corporation deals with streets and buildings and provides for "garden streets" by allowing for narrower streets than the regulation width where the houses are built back in gardens. In Part III. of the Coventry Corporation Bill it is laid down that any new main thoroughfare shall be of a minimum width of 80 feet.

Other Municipal Proposals.

The London County Council are also seeking power to control and regulate any movable erection extending beyond the general line of buildings in any street to which the consent of the Council would be required in pursuance of Section 22 of the Act of 1894 if such erection had been fixed and not movable; or (subject to certain exceptions and limitations) any pulley, crane, loading flap, awning, screen, blind, lamp, daylight reflector or prismatic light, clock, sign or device, case, stall or other fittings for the display of articles extending beyond the general line, or overhanging the public way. The City Corporation is also asking for practically similar powers within its area. The London County Council further seek extension of time for the construction of the Thames Embankment extension and the improvements at Westminster, and ask for power to provide sanitary conveniences, street refuges, etc., on the Victoria Embankment. Hull Corporation want to construct a landing stage and pier in the River Humber at an estimated cost of £40,000, and Belfast Corporation to extend the cemetery at a cost of £22,000. The Woking Urban District Council wish to combine with other authorities in improving the bridges and public ways in connection with the Basingstoke Canal, which apparently has fallen into a bad way. It is proposed by the Widnes and Runcorn Bridge Bill to transfer that bridge to the Widnes Corporation, who will strengthen and improve it, and a further proposal is to vest Kingston-on-Thames Bridge in the County Councils of Surrey and Middlesex, and to spend over £100,000 in widening the bridge and approach roads. By far the most important bridge proposal is, of course, that of the City of London Corporation for the construction of St Paul's Bridge.

Sewage Matters.

Several important sewerage schemes are proposed, and the Manchester Corporation ask to construct new main sewers at a cost of £1,000,000. By the Eastern Valley of Monmouthshire Sewerage Board Bill it is suggested that a joint board of six local authorities be formed and that £85,000 be expended on sewerage works. The Western

Valley (Monmouthshire) Sewerage Board, an existing authority, want to spend an additional £30,000 on works and land; whilst the Metropolitan Water Board is bringing in a Bill to relieve itself of the duty of dealing with the sewage of Hertford, which duty will revert to the local authority. By the Afon Lwyd Valley Sewerage Bill it is sought to constitute a joint sewerage Board for seven local authorities, including Pontypool, and to spend £118,000 on sewerage works. Failing the introduction of a Government Bill dealing with sewers, the local authorities seem to have taken the matter into their own hands for no fewer than 24 Corporations and Urban District Councils, including Canterbury, Stoke-on-Trent, Dover, Grantham, Lowestoft, and Maidstone, have combined together and brought in a Bill to settle, so far as their respective districts are concerned, the vexed question of what is a drain and what is a sewer.

Waterworks.

There are, as usual, a fair number of water Bills, of which the most interesting as well as the most important is that promoted by the Metropolitan Water Board for the construction of huge storage reservoirs in the Thames so as to cope with the future demands of London. These works will, of course, be spread over a number of years. In the case of some of the Bills no powers are taken for the construction of new works, but the following estimates of contemplated expenditure on work described in other Bills are deposited:—Metropolitan Water Board, £6,900,000; Rhondda Urban District Council, £84,556; Rhymney Valley Water Board, £436,000; Merthyr Tydfil Corporation, £399,972; Oystermouth Urban District Council, £8,450; Blackburn Corporation, £75,000; Gloucester Corporation, £26,690; Ipswich Corporation, £26,000; Hastings Corporation, £49,830; Hull Corporation, £120,000; Rotherham Corporation, £20,000; Halifax Corporation, £30,000; Chesterfield Water Board, £185,251; Swinton U.D.C., £10,000; Southampton Corporation, £7,000; Paignton U.D.C., £27,500; Felixstowe and Walton Water Co., £60,432; West Cheshire Water Co., £27,228; Chester Water Co., £59,870; Ely Rural Water Co., £9,655; and Wirral Water Co., £8,175.

Docks, Harbours, and River Works.

The most important Dock Bill is that promoted by the Great Yarmouth Dock Commissioners, who wish to raise £250,000 to construct a dock 1,600 feet long and 400 feet wide. The Milford Dock Co. wishes for power to erect ice factories; the Southampton Harbour Board ask to be allowed to borrow £200,000 for the purposes of the undertaking; Bristol Corporation to borrow about £80,000 for dock purposes; the Manchester Ship Canal to be allowed to construct a pier; the Dover Graving Dock Co. seek an extension of time for the completion of works; and Mr. W. Horton asks for power to enlarge Rhos-on-Sea Pier and construct a marine lake.

Railways.

Twenty-four Railway Bills have been deposited, and the most important estimates for constructional works lodged are as follows:—Greater London Railway, £3,705,568; Metropolitan Railway, £84,807; Metropolitan District, £63,100; Gt. Northern, £818,260; Gt. Western, £385,402; North Eastern, £434,872; Alexandra Dock and Railway, £232,165; Midland, £941,627; North Yorkshire Dales, £486,044; Central London, £145,896; London Electric, £407,000; Barry Railway, £77,497; and Cardiff Railway, £54,933.

CLASSIC ARCHITECTURE IN ENGLAND AND AMERICA.

In this paper read before the Camera, Sketch, and Debate Club of the Architectural Association, Mr. A. E. Richardson seeks to show that the influence of the Classic Revival in England is potent in its effect on the present-day monumental architecture of the United States.

AT the present time, English architects are being stirred to greater efforts by the cultured and scholarly architectural style which is rapidly developing in the United States of America—a style which completely expresses the national character because it has all the attributes of fitness. This development of architectural design in America means to England precisely what the artistic activity of the archaic Greeks in Dorian Sicily, Magna Græcia, and the Ionian cities of Priene, Miletus, and Ephesus meant to the culmination of Hellenistic art at Athens.

America, with its unbounded resources, great commercial enterprise, and latterly a closer appreciation of the arts, has awakened the mother country to a fuller sense of dignity and responsibility with regard to the important question of the design of monumental architecture.

The Classic Revival in England.

The return of Inigo Jones to England, fired with enthusiasm for the works of Palladio, and with a still greater enthusiasm for the Roman antiquities, resulted in the magnificent plan for the new Palace of Whitehall; a plan undoubtedly suggested by the plans of the great Thermæ. Sir Christopher Wren lacked the opportunities of foreign travel and study abroad such as were enjoyed by Inigo Jones. Wren's knowledge of classic architecture was derived from such publications as Desgodetz's treatise on Roman architecture, Evelyn's "Parallels," and other works. His undoubted mastery in architectural composition was somewhat marred by the weakness of the ornament he employed, which has nothing of the classic spirit about it. Wren's successors gradually developed a pure Palladianism which in turn gave place to a Roman revival, followed by a Greek revival, and culminating in a style which was a combination of Greek, Roman, and Italian motifs.

Early in the eighteenth century it became the fashion for talented amateurs to travel abroad, and it was owing to the patronage of Richard Boyle, Earl of Burlington, that Castell's "Villas of the Ancients" was published in 1728. This nobleman collected statues, objects of art, and drawings. In 1730, he caused to be published Palladio's original drawings of the Roman thermæ, and generally advanced the ideas of the amateurs and professionals towards a greater purity of taste. The formation of the Society of Dilettanti in 1734, to promote the study of classic antiquities, the publication of Robert Wood and Dawkin's books on the "Ruins of Palmyra" (1753) and the "Ruins of Baalbec" (1757), and of Stuart and Revett's "Antiquities of Athens" (1762) and "Antiquities of Iona" (1769), and the examples afforded by the buildings of other architects who had travelled abroad, but who did not publish any works connected with their travels, all combined to familiarise Englishmen with the spirit of Classic art.

The Influence of Piranesi.

Piranesi's first dated etchings appeared in 1748, and consisted of thirty plates showing views of triumphal arches and other

Roman buildings. Copies of these etchings were acquired by the *virtuosi* in England, and the architects of the time constantly referred to these wonderful illustrations for inspiration and guidance. Sir William Chambers published his treatise on the decorative part of civil architecture in 1759, a work which still exerts its beneficial influence.

The Great Period of Civic Design.

The Regency period might be described as the great period of civic design. John Nash and Decimus Burton directed their attention to extensive compositions, and it was owing to the efforts of the former architect that the arrangement of Regent Street into imposing architectural blocks regulated as to height by the width of the street was rendered a successful achievement. The magnificent composition of the Regent's Park terraces designed to house the members of the aristocracy and to give them at once the advantages of a palace in London, with views reminiscent of their country estates, can be attributed to both the aforementioned architects.

The stucco work of this period has scale and dignity. More attention was paid to composition on a great scale than to beautiful detail. Much of the work at Regent's Park has nothing to deserve approbation. The detail will not survive analysis, and the sculpture is indescribable, but the scale is magnificent.

Work in Provincial Cities.

In addition to the work that was being erected in London, great changes in monumental design were occurring in Scotland and Ireland, as well as in all the large provincial cities of England. In Edinburgh were the superb High School and the Royal Scottish Academy, in Leith the Town Hall and the Customs House; in Glasgow, the Royal Exchange and Square and the Courts of Justice; in Paisley, the Town Hall; in Greenock, the Customs House by Playfair. In Dublin were three magnificent railway stations, including the Broadstone Terminus of the Midland and Great Western lines; also fine structures at Cork and Belfast. At Liverpool there were the Customs House, St. George's Hall, a branch of the Bank of England, and other works. At Newcastle, there was the fine Central Station by Dobson; at Leeds, the palatial Town Hall; at Huddersfield, a lengthy railway station of considerable merit; at Bristol, the new buildings in Corn Street; at Bath, the work by Goodridge the elder.

The whole of the foregoing work proceeding at that time in Great Britain and Ireland was a reflex on a smaller scale of the activity evidenced in London. The names of Soane, Smirke, Inwood, Nash, Decimus Burton, Barry, Tite, Basevi, and Pennethorne were household words; in fact, these distinguished gentlemen formed the nucleus of the Royal Institute of British Architects. The foremost English architects of that day were in constant correspondence with their French and American brothers, and an exchange of ideas took place which resulted in English architecture gaining a reputation for scholarly refinement and classic beauty.

The Greatness of Cockerell.

There is one name which I have not previously mentioned, a name so important in architectural development that I have reserved it to the last. I refer to Professor C. R. Cockerell, an eminent archæologist, a great architect, and a still greater designer. Cockerell commenced his travels abroad in 1810, and spent six years labouring at Aegina, Bassæ, and at Athens, afterwards returning to England through Italy and France. It is significant of Cockerell's work that it never approached pedantry. The professor himself said that regard for antiquity lost half its merit when it degenerated into mere facsimile reproductions; the more exact the copy, the greater the failure. Cockerell's finest building was the Sun Assurance office in Threadneedle Street, now very much altered by the insertion of another storey. This building shows the wonderful power of design the professor had, as well as displaying his profound knowledge of architectural history; the resulting combination of motifs is excellent. Greek finesse is allied to Roman scale and Italian warmth, and, underlying all, the master-hand of the genius can be discerned. The detail is always refined, and it approaches as near to freshness and originality as could be desired. I should, however, sincerely regret to see any of Cockerell's buildings or designs slavishly copied. If that were done, all hope of advancement would be checked. What must take place is a close study of his methods and style, and a sure knowledge must be obtained of the motifs he drew upon to make his work so thoroughly English.

To-day we stand bewildered amidst the Babylonian confusion brought about by the thoughtless reproduction of various historical styles. Indeed, it is the custom now to hear such remarks as, "What a fine Georgian library!" or "What a magnificent Elizabethan house!" instead of "What a successful library or expressive house!" Our civil architecture has been criticised by distinguished foreign architects as being akin to the art of the theatrical costumier. We have been engaged in reproducing buildings of romantic periods, regardless of direct design and modern expression. To quote Professor Cockerell: "The study of the beauties and defects of celebrated buildings should be the aim of the scholarly architect. This was the confirmation of theory, and led to that knowledge of form and combination which makes the accomplished architect. The importance of this confirmation of theory was admitted by every practical architect. No man invented an order or a series of mouldings. These he accepts from the greatest and most reputed masters who have preceded him. He stores designs, books, and portfolios, and prides himself, like the lawyer, on his precedents and authorities. Absolute invention he never proposes to himself for a moment; but by an enlarged study of history and examples he is able to detect the petty prejudices of schools, to emancipate himself from the trammels of nationality and fashion, and to regard the works of all times and countries as subject to his use so far as they may be conformable to strength, convenience, and beauty."

The Value of Criticism.

To this extract from one of the professor's lectures must be added a word with regard to the power of criticism. Although the critical power may be of much lower rank than the creative, it is none the less important. The merciless criticism to which the works of the Greek architects were submitted resulted in the

maintenance of a high standard of perfection; and were criticism to be a little more outspoken in this country, I venture to suggest that due regard would be paid to eliminating sundry superfluous trappings and tawdry ornamentations with which our new buildings are spoiled. I refer to the indiscriminate use of broken pediments, cartouches, rusticated columns, grotesque masks and fruity festoons, which have no direct argument in expressing the character of a structure. Such debased forms could very well be omitted, especially as they are used without any regard for sentiment. Buildings ornamented in this way masquerade under the title of Classic. They are not even pseudo-Classic; and already this neo-impressionistic form of architecture is meeting with the approbrium it so richly deserves.

Domestic versus Civil Architecture.

The cultivation of our domestic architecture has been at the expense of our civil art, and splendid opportunities for the creation of really monumental structures have been frittered away. Our efforts have been directed towards the development of a civil style based upon domestic motifs, instead of towards a grand monumental style which should express the culture, power, and might of the Empire. The lack of this appreciation of a monumental style is very apparent in the Colonies. Architects practising in Australia, New Zealand, and South Africa follow, through the medium of the building papers, the latest fashionable tendency in the mother country, and the reflex is in most cases worse than the original. Canada is the exception. There American architects are employed or closely followed, and the result has more than justified the experiment.

The Grand Style in America.

Judged by the high academic standards followed in France and America, we are decidedly provincial in our tastes. In a word, we have no definite standard of taste, no criticism, no unity amongst our leaders; and, lastly, we have no great National School of Design, which should serve as a finishing school. The architectural traditions of England are greater than the genius of any one practitioner, however capable he may be; and I feel sure that we have in this country some of the finest examples of monumental architecture the world contains. Unfortunately, we have not appreciated these works to anything like the extent to which they have been appreciated by the Americans, and it has been owing to the influence of these buildings that American architecture stands today on the bed-rock foundation of the "grand style."

In America during the early days of the Republic, architecture assumed a more monumental character. The first trace of European influence in this connection is to be noticed in the New York City Hall, built in 1803 and finished in 1812 from the designs of Mr. Comb. This building shows traces of the Louis Seize style in its general arrangement

The earlier buildings comprise the original State Capitol at Washington (1793-1839), the State House at Boston (1795), and the University of Virginia at Charlottesville (1817).

The Classic revivals in England, France, and Germany began to assert their influence on American architecture about this period, and reached their zenith about 1846. The greatest influence, however, came from England; and the magnificent contemporary academic architecture has

left its impress very strongly on the official architecture of America; so much so that it would not be very far wrong to say that the English tradition and character has, so far, predominated over all other phases of architecture practised in the States; and this in spite of the eclecticism now being pursued. The Civil War temporarily broke the chain of sequence between the earlier work and the work of the present day.

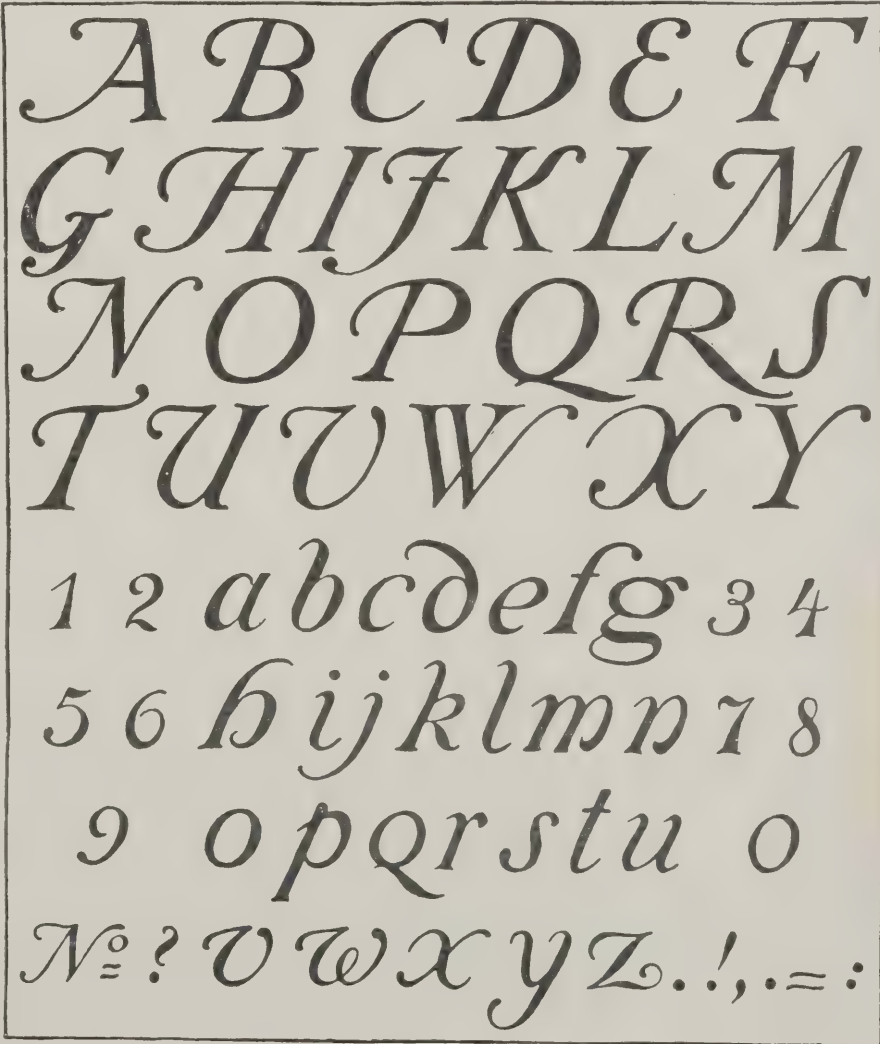
Such geniuses as R. M. Hunt (1827-95) and H. H. Richardson (1828-86) did much to attract the attention of the American public towards sound architectural methods. The establishment of schools of architecture in the great civic centres, and the opening of museums, stimulated a desire for foreign travel; and the result has been the extraordinarily rapid development of the national architecture. American students throng the studios of Paris and Rome. Their desire is not blindly to copy the works of past masters, but to emulate the spirit of these works, and to advance the art of architecture until it reaches a still higher plane. The work of Messrs. McKim, Mead, and White is too well known to be redescribed. These three gentlemen had the advantage of a Parisian training, but they had something a great deal more valuable to the practice of their art than even that; they were fortunate in having the rare gift of discrimination, and more than fortunate in having the reticence and austerity of the Anglo-Saxon character deeply engrained in their souls. American architecture today owes its style, character, and tone to the influence of the scholarly exponents of the Classic revival in England.

THE ROYAL AUTOMOBILE CLUB.

The new premises of the Royal Automobile Club in Pall Mall will be completed, it is expected, by the end of February. The total cost, including about £40,000 for interior furnishings, will not fall far short of £300,000.

The building occupies the site of the old War Office, with a frontage of 230ft. to Pall Mall, and extending to an average depth of about 150ft. Upon entering the main entrance hall access is at once obtained by three staircases to the main floor, which is 5ft. above the level of the pavement. A wide staircase at the rear of the entrance hall leads forward to the inner vestibule, smaller staircases on the left and right leading respectively to the ladies' reception-room and the strangers' room. The reception-room in turn leads directly to the restaurant, which is a commodious hall reaching from Pall Mall to the terrace facing Carlton Gardens, and occupying a depth of about 100ft. These two rooms, which will be the only portions of the building to which lady visitors will be admitted, are decorated in Louis XIV. style, the strangers' room being in the Georgian style. The entrance hall, however, is entirely dependent upon its architectural features for its beauty, there being an entire absence of decorative effects. A conspicuous feature of the restaurant is its fine large eighteenth century painting by Hubert Robert.

The strangers' room leads to the club-room. This is of similar dimensions to



A MODERN ALPHABET

the restaurant, and is decorated in Georgian style. The ceiling is an exact reproduction of the original Georgian ceiling at the old War Office.

Nine paintings by Hondekoeter and Morrow will lend additional distinction to this room.

The central oval hall or vestibule, which is reached from the entrance hall, extends through the centre of the entire building, and is ceiled by a glass roof. This hall is the distributing centre of the building, and from it most of the principal rooms radiate. Straight through this hall the lounge gallery is reached. This is 115ft. long, 40ft. wide, and 30ft. high. The chief attraction here is the painted Louis XVI. ceiling, with rolling white clouds on a blue ground, the general design of this apartment being after the famous *Galerie des Glaces* at Versailles. To the right of the vestibule is the club's post office, which is of substantial size, and will be provided with private letter boxes upon the American principle for the use of members.

On the first floor, to the east side, is the members' dining-room, with five lifts communicating with the kitchen. The committee-room and library are placed on the west side, while the billiard and card rooms occupy the Pall Mall frontage. These are all decorated in Adam style. On this floor, in front of the committee-

room, but reached by a private entrance and staircase, is a splendid apartment, overlooking Pall Mall, and St. James's Square, set aside for the use of the associates of the club.

The second floor is practically monopolised on the west side by the club's general offices, and on the east side by bedrooms, there being about 100 on this and the upper floors.

Descending from the entrance hall by spacious staircases to the lower ground floor, access is had to the swimming bath, Turkish bath, the fencing-room, gymnasium, three squash racquet courts, and the shooting gallery. Here are also the cloak-rooms, dressing-rooms, and a barber's shop. The east side of this floor is entirely taken up by the kitchen, servants' quarters, store-rooms, etc. An extensive gallery, with seating accommodation, extends towards the rear of the lower ground floor, and overlooks the racquet courts and other basement attractions. The walls and floor of the swimming-bath are lined with marble. The bath itself, which is surrounded by mosaic columns, and of Grecian design, is 90ft. long, 30ft. wide, with a depth ranging from 4½ft. to 8ft. The Turkish bath is also treated in Grecian style, the shampoo-room, plunge-bath, etc., being lined with marble. The three full-size squash racquet courts are

floored with teak, the walls being of the same material.

The architects of the building are Messrs. Mewès and Davis and E. Keynes Purchase, F.R.I.B.A., and the consulting engineer is Mr. Wingfield-Bowles. The building contractors are the Building Construction Co., Ltd.

PARISH CHURCH, COLDSTREAM.

This church, situated in High Street, Coldstream, replaces the old parish church, of which the tower and belfry are incorporated in the new building. The exterior is somewhat similar in style to the old building, the chief features being round-headed windows with architraves and projecting key blocks, and the wall-head finished with a simple cornice and parapet. The dressings are of Blackpasture stone filled in with random rubble. The floor of the church is of wood, but the passages and chancel are paved with stone in squares laid diagonally. Whitsome-newton stone columns are used in the interior to support the steel principals carrying the plaster barrel-vault. Doors, seating, etc., are of yellow pine stained and wax-polished, the stalls and communion table in the chancel being of oak. The pulpit is of stone. Mr. J. M. Dick Peddie was the architect.



PARISH CHURCH, COLDSTREAM. N.B. J. M. DICK-PEDDIE, ARCHITECT.

THE CARDINAL MEDICI'S PLEASURE HOUSE.

BY HALSEY RICARDO, F.R.I.B.A.

In his paper read before the Royal Institute of British Architects on Monday January 16th, 1911, from which the following extracts are made, Mr. Halsey Ricardo described the famous "pleasure house" contrived for Cardinal Medici, by Bramante, Da Vinci, and Raphael.

IN this case of the Cardinal's pleasure house—which bears the name of Raphael as its designer—one wants to know what are the architectural forbears of Raphael's ancestry. He was—we can see clearly—the son of Bramante, who was the son of Alberti, and half-brother to Leonardo da Vinci. But on each generation a cloud of cousinry impinges, and as each man grows up to man's estate he receives a call to Rome, and becomes thereon a changed idealist. The romance of Rome—the story of its past—seizes him, and for the rest of the term of his life he moves as in enchantment, looking backward, dreaming of the past, and vowed—as far as in him lay—to reproduce it. Not so Da Vinci, however. His ideals were in the future—so far before him that we have not even yet realised some of them. "He is the forerunner of an age that has not even yet arrived. He dreamt of giving mankind, by means of science devoted and subservient to art, the empire of the world. Between the man and his dream, time is lessening the distance, but the meeting is not yet. He passes beyond art and stands upon the very edge of infinity—face to face with the insoluble and yet forever questioning. He hints at more than we even yet know." He exercised the most unbounded influence on the world of his day—was painter, poet, sculptor, architect, mechanist, mathematician, philosopher, and explorer. He also studied botany and anatomy, was an admirable extempore performer on the lyre, and the first scientific writer on his special art of painting. If we ask for evidences of this extraordinary versatility and ability we are given in answer a few blackened canvasses, the bedaubed fragments of a ruined fresco, and the witchery of a smile. The manuscripts of Leonardo da Vinci are the chief existing proofs of that extraordinary talent with which he has been credited from the time of his earliest biographers downwards.

Bramante and Da Vinci.

At Milan—in the Court of Ludovico il Moro—the two men, Bramante and Da Vinci, came together and were friends. Leonardo has left schemes showing how a city should be laid out—one by an ingenious system of canals, one by having the roads in two storeys—the ground floor for goods, carriages, pack horses, and common people; the other, on the first floor, reserved for people of quality. The sanitary conveniences occur close to the stairs that connect the two routes, and the city is to be placed either on the seashore or where there is a wide river of sufficient current to carry far away its rubbish and its sewage. It is easy to suppose that such projects were done by the two friends in concert, and that each by suggestion and diagram illuminated the other. For sixteen or seventeen years they lived side by side.

A Building's Surroundings.

When the crash at Milan (4th April, 1500) came—after Beatrice's death—Da Vinci sought the patronage of the French king, and Bramante went to Rome. Up till the time that Bramante came, there had been little of the recognition of the contributory value—or the reverse—of a building's surroundings; the church and

convent cloister suggested and reproduced itself as the loggia in the piazza; fountains—as at Perugia and Siena—mitigated the heat and glare of the wide stretches of blinding pavement, and played into the hands of the Town Hall and Cathedral, as a small child mitigates the formality of a crowd, giving it a sense of scale and accentuating the air of seriousness by its own playful motion. The town walls hemmed in the houses too much to permit a pleasure garden of any size to the dwelling, still less could the count afford to enclose a pleasure within his castle walls outside the city. At Mantua, Isabella had made a beginning, and her sister at Milan had followed her lead, and worked on a larger scale; and both Da Vinci and Bramante had taken up this new conception and had worked at it *con amore*.

A Casino in the Vatican.

About fifteen years before Julius ascended the chair, Pope Innocent VIII. had built himself a small casino in the grounds of the Vatican palace, but a good long way off, across a valley and on a rising spur of the Vatican hill, whence a wide prospect was obtainable, and this he called his Belvedere. Since its erection a considerable number of antiques had been and still were being discovered, and Julius began to form the nucleus of the museums of the Vatican by placing the treasures there. He called in Bramante to connect this outlying pavilion of the Belvedere with the palace, so that he might enjoy the gratification of viewing his statues and other antique marbles with the comfort of being under shelter. To do this Bramante designed two galleries, which reached from the palace, bridging the valley, to the spur on which the Belvedere stands, and including the pavilion in one of its angles. The difference in levels was got over by excavation and accumulation; the enclosed pleasure was made in two heights; stairs and terrace walls linked the two long parallel sides about midway in their length, and the vista was finished by a colonnaded hemicycle, using the great bronze fir-cone from the ancient temple of Isis and Serapis as a fountain in its focus. The galleries were colonnaded arcades in two heights. You left the Vatican on the first floor and reached the Belvedere at its ground level. Besides these galleries there were alterations and additions to the Belvedere itself.

Raphael follows Bramante.

"The Pope, being determined to undertake the commencement of that stupendous building, the Church of St. Peter, caused one half of the older fabric to be demolished, and set hand to the reconstruction, with the firm resolve that in art, invention, arrangement, and beauty, as well as in extent, magnificence, and splendour of decoration, that edifice should surpass all the buildings ever erected in that city. With his accustomed promptitude the architect laid the foundation of his work, continuing his labours to the close of his own life, which followed soon after that of the pontiff." The first stone was laid 18th April, 1506. Julius died in 1513 and Bramante (aged 60 in the following year, leaving in his will the instructions that his friend Raphael should carry on his work

at St. Peter's. They had come—both men from the same country, Urbino; and Bramante had helped Raphael substantially with the architectural backgrounds and details to his pictures and frescoes. He was now, at Bramante's death, 31 years old. He could be trusted to hand on—undimmed—the principles that had actuated Bramante in his pursuit of realising the grandeur that was the dominant trait of antique Rome.

Leo X. had made his cousin Giulio a cardinal immediately on his accession to the Pontificate, and the cardinal set about devising a country retreat from the hot dusty streets of Rome, the noise and tumult of its inhabitants—outside the city, a mile or so away, on the slopes of Monte Mario, where, amid the silence of the groves and the cool plash of falling waters, he could build himself the *ne plus ultra* of a pleasure house, both in beauty, in sumptuousness, and in the scholarly treatment of its decoration. This was the Villa Madama.

Raphael as Landscape Gardener.

Raphael made for the cardinal various designs, and lived long enough to see the actual building started and the terraces beginning to shape themselves. His mind—eager to grasp and assimilate the word-pictures of the learned authorities poured freely into his ears—saw the possibilities of house and landscape gardening, and at once began to materialise them. The Villa Madama, after Raphael's death, was carried on by Antonio San Gallo the younger, as far as construction was concerned, Giulio Romano and Giovanni da Udine fashioning the decoration. The villa was never finished in its entirety. Pope Leo X. died most unexpectedly at the end of 1521, after a reign of eight years, aged only 45. The next Pope, a severe and ascetic Fleming, spread terror and dismay into the hearts of polite Rome by his grim disapproval of every form of luxury and the arts. Eventually the villa came into the possession of Margaret of Parma, daughter of the Emperor Charles V., and it is from her that it derives its name of Villa Madama.

But this attempt of the Cardinal's was the beginning of many such undertakings. The discussions that must have raged round it—the ideals as formulated by Raphael, by his pupils, by the literary authorities, by the rich patrons who crowded the Court of his cousin, Leo X. at the Vatican—helped to constitute this building as a model of what a country retreat and pleasure house should be, so that when, after the death of Raphael, his school was dispersed, and, after the sack of Rome, all employment for artists was for some years in abeyance, Baldassare Castiglione was able to pick up Giulio Romano and introduce him to the Gonzaga at Mantua, and Giulio Romano was able to fire that prince with a desire to have also a pleasure house of his own just outside the walls of Mantua. The ground where the horses were stabled and trained—the Gonzagas were great lovers of horse-flesh, and prided themselves on the superlative merits of their horses—was devoted to this purpose, and thus the well-known Palazzo del Tè came into being. All round Rome, at Tusculum, on the Alban hills, princes and cardinals took to building in after years these country mansions, with elaborated gardens, fountains, terraced walls, and sheltered arcades, and gradually a race of water engineers sprang up to construct the water jets, cascades, and hydraulic surprises that struck Evelyn's fancy so much, and won his admiration when he visited Italy in the days of Oliver Cromwell. Henry VIII.'s palace at None

such, Shakespeare's reference to pleached alleys, Bacon's directions for laying out the gardens to a stately house, derive from this initiative of Cardinal Giulio's as materialised by Raphael, and behind Raphael stand Bramante and Da Vinci.

Discussion.

Sir Charles Holroyd, proposing a vote of thanks, said it was an exceedingly pleasing thought to him that the idea of the villa garden and residence should come from Raphael. He regretted that Mr. Ricardo should have omitted to illustrate the Palace at Urbino, which revealed a lighter touch than any other work by Bramante of which he knew. Raphael certainly used Bramante, who was his school-master—not his father. Raphael was easily excelled by Leonardo. He (Raphael) never touched Leonardo in greatness, although he surpassed him in lightness of touch. He (the speaker) was acquainted with

some of the Roman villas, which exhibited the characteristics of the well-ordered garden, but which lacked, however, the regard for picturesque work in the garden, such as variation in ground levels.

Speaking of the laying-out of Pompeii, the speaker said he remembered standing at the crossing of two streets and seeing in one direction Vesuvius, and in another the beautiful bay and the town on the rocky shore. Looking at right-angles he saw to one side a view of the sea through a dip in the hills, and to the opposite side a fine view of the Apennines. The whole scheme appeared so natural; and the vistas occurred as though the scenery had been specially arranged. The two roads were rather stiffly placed, and not, in our modern sense, picturesque. Referring to Raphael, the speaker made allusion to "The Last Supper," at Milan, above which two shields were painted. These

were delightful, and deserved inspection, although they were usually passed unnoticed. "The Last Supper" was really the greatest thing ever done in paint; and if Leonardo had done this work only, his fame would rest secure. Pope Julius, he thought, although of an interfering disposition, was a good patron; and he (the speaker) was of the opinion that the best period of art was under tyranny. Many, he knew, would disagree with him.

Mr. Paul Waterhouse, seconding the vote of thanks, attributed the charm of the Renaissance to the ability to enter into its spirit and to share it with the men of a past age.

Mr. Halsey Ricardo, in the course of a brief reply, doubted Raphael's intimacy with Urbino, which he left when a child.

THE PRESENT POSITION OF BRITISH SCULPTURE.

BY W. REYNOLDS-STEPHENS.

In the January issue of "The Nineteenth Century," Mr. Reynolds-Stephens formulates a plea for the nationalisation and better patronage of British sculpture. The following are some abstracts:—

Just recently there has been at the Japan-British Exhibition the second representative collection of works by British sculptors, the first of such collections having been shown in the same galleries at the Franco-British Exhibition two years ago. That two such large gatherings of our sculpture could be got together so closely following one another confirms the now often-expressed opinion that in this branch of the fine arts there is recently great evidence of a renaissance here in Great Britain.

The works were there exhibited in such a manner and under conditions so favourable as to space and lighting that, for the first time, a somewhat just estimate of our sculpture—as a school—could be made. Placed, as it was in the Franco-British Exhibition, alongside so much French sculpture, it was quite justifiable that a Britisher should feel some pride, seeing how the craftsmanship of our works stood the test of that comparison.

But after careful thought and analysis devoted to the works individually, when they are seriously considered on a broad basis collectively, a question forces itself more and more to the fore: Is this British sculpture? Have we any modern school of our own? Speaking generally, our work is exotic; certainly in but a small degree can it be considered really British; born of national thought and bred on our soil. Yet in all directions there is evidence of vitality; the very diversity of aim and manner of working, the range of skill in craftsmanship, would be a real matter for rejoicing if only there were present a bond of national thought. So many attempt speaking in a foreign language rather than in our mother-tongue. One sees a large number of works almost French, works greatly influenced by the severer realism of the *Cinquecento* Italian; others attempting the vigorous mannerisms of the Michelangelo school, while some pose as followers of the Greeks; but there is terribly little which is our real own. We shall not be ourselves until we recognise that we must throw off this preponderance of foreign influence. Our sculpture may now be a fair parallel to Pope and his school, and we may take warning from the comparison; full of grace, of good colour, of brilliantly turned phrases, based



THE CHURCHILL COTTAGE HOMES, CHEDDAR VALLEY, SOMERSET: VIEW
LOOKING TOWARDS GARDEN SQUARE. SILCOCK AND REAY, F.F.R.I.B.A.,
ARCHITECTS.

upon a fine foreign tradition, but much in want of the spark of our British thought to give it real life. Much of it, like the writings of the Pope school, is full of good technique, but dead as ditchwater—futile attempts to reclothe dead bones in the manner of the French and Classics and give them forth to masquerade as living things. Our sculpture could do with even a little less brilliance of performance, if it could have instead a good bit more humanity and thought.

Our brothers the architects, when they are dealing with important buildings frequently make proposals for introducing sculpture, but these are of the items which are the first to be deleted from the scheme, at the order of the clients, on the score of needless expenditure. Most of such sculpture as is used now with architecture is required to be a mere revival of some old style, and does nothing for modern and national thought in sculpture; of Gothic, for instance, in which so many attempts are made to revive the old forms of sculpture for our modern churches. It is merely the masquerading of dead bones in lieu of living sculpture, with results that are a mere affectation and sham, deceiving only the unknowing and gullible donors, and filling our churches with sculpture as lifeless as the stones of which they are carved—our churches, the places of all others where only the most living work should find a place!

THE SOCIETY OF ARCHITECTS.

A new departure, so far as the Society is concerned, was made at the last meeting at 28, Bedford Square, when only formal business was taken, and the remainder of the time was devoted to social intercourse and music. The object of the gathering was to give members and students an opportunity of meeting together on a more friendly and informal footing than is possible under the usual circumstances; and that the Council's experiment was fully justified, was shown by the way in which the members and their friends availed themselves of the invitation.

The President (Mr. Geo. E. Bond) contrived to combine in his brief address (directed more particularly to the students) both instruction and humour, and his remarks were received with every indication of appreciation.

Round the walls of the reception rooms and in other parts of the building were exhibited measured drawings, sketches, water colours and photographs; the work of Col. F. S. Leslie, R.E., hon. secretary, Mr. B. R. Tucker, Mr. F. M. Cashmore, Mr. Frank Hearne, Mr. H. Y. Margery, Mr. S. R. Smith, Mr. A. B. Dury, Mr. A. F. Davies, Mr. F. R. Catling, Mr. J. T. Westbye, Mr. E. J. Williams, Mr. J. D. Stewart, and Mr. H. Phayre. Light refreshments were provided, and smoking was permitted. A feature of the evening was the excellent programme of music arranged by Mr. Willock, F.R.I.B.A.

During the evening the chairman extended a welcome to the visitors, and Mr. Max Clarke, F.R.I.B.A., in responding, referred with satisfaction to the arrangements made for the deliberations of representatives of the R.I.B.A. and the Society on registration, which he hoped would result in great benefit to the profession.

It is desired that in future the musical talents of members of the Society may be enlisted to add to the harmony of the gatherings, and the secretary will be glad to receive the names of any who are proposed to assist in this way.

FEDERATION NEWS.

National Federation of Building Trades Employers of Great Britain and Ireland.

The thirty-third annual report, for the year ended December 31st, 1910, which has been prepared for presentation at the annual general meeting, to be held to-day at the Trocadero, is very voluminous, and from the large number of interesting items it contains, the following few extracts will be found of use and interest.

Conciliation Boards.—The National Board has held two meetings during the past year. The first heard an appeal of the Birmingham carpenters and joiners, and decided that the case be deferred until next March, and then come back to the Board for settlement; the second was the annual meeting, when the various proposals put forward by the operatives for amending the rules were considered and rejected, except as to the eligibility of delegates sitting on more than one section of the Conciliation Boards, as to which there was evident a strong desire on the part of the operatives that some alteration should be made. Eventually as a compromise the employers suggested the following proposal: "That members of the various Conciliation Boards who may be members of any Board having considered a case, shall not sit personally on any subsequent hearing of the said case, but shall send substitutes," which the operatives also considered would be acceptable to their side. This proposal was approved by the last general meeting, and has also been approved by two of the centres, and awaits the approval of the remaining centres, which is expected shortly.

An appeal of the Nottingham bricklayers was also heard and settled, giving an advance of 4d. as from 1st January next, and making some other minor alterations.

The Workmen's Compensation Act was also considered with special reference to the working of the Durham miners' scheme, and the advisability of setting up Arbitration Committees under the Act in the Building Trade, also the question of the importation of work from low-paid districts. Both questions were remitted to a special sub-committee for further investigation and report.

Two recommendations from the previous annual meeting, having been before the parties for the intervening time and no objection taken, were now made part of the rules. The first is an addition to Rule 12: "That the side which fails to find a quorum at any meeting shall pay the third-class railway fares and 10s. a day expenses of each of the representatives of the other side who have attended." The second is a new rule that: "If any dispute or question has been referred to any of the Boards of Conciliation, it shall not be competent for either side to give notice for an alteration of any local working rules having reference thereto, pending completion of the procedure for conciliation set forth in these rules; but in the event of no decision being arrived at, or if a decision is given without stating the period for which it shall endure, it shall be competent for the applicants to give notice for alterations of rules if delivered within 14 days thereafter, and counter notices if delivered within a further 14 days, notwithstanding the provisions of any local working rule as to notice; provided always that such notices shall expire on the date given in the said local working rules." No notices for amending rules have been received this year.

South African Federation.—On the 17th September, Mr. Jas. T. Brown, Secretary of the South African Federation, after a visit to this country of some five months, returned home. He has sent out a number of masons to the Transvaal on a two years' contract, and arranged for more to follow if required. Mr. Brown expressed himself as pleased with his experience of our meetings, and ready to advise his Federation to become affiliated to this Federation, and a formal intimation to that effect may be shortly expected.

Press Articles.—Nearly fifty articles upon matters of importance to the Building Trade, and intended to advance the interests represented by the Federation, are enumerated as having appeared in the official journal.

The Dublin M.B.A. have succeeded in agreeing with the Royal Irish Architects' Institute on a Form of Contract for use where quantities do not form part. The following comparison will indicate the points of agreement and difference between the New Irish Form of Contract and the Agreed Form in use in England. The Lancashire, Cheshire and North Wales Federation, which has put forward suggestions for amending Clause 30 of the Agreed Form of Contract as some remedy against the locking-up of builders' capital in balances owing on completed contracts and is supported by the Northern Centre, has considered the Irish Form and recommends its substitution for the Agreed Form with the addition of the said proposed amendments to Clause 30 thereof. A deputation has been appointed by the Administrative Committee to bring the matter before the Council of the R.I.B.A., and the Institute of Builders has been invited to join in making representations thereon, but has decided: "to take no action in respect of the application of the National Federation for the amendment of the Agreed Form of Contract and thinks that any proposal to disturb the existing arrangements undesirable at the present time." Considerable activity is being displayed by branch associations in pressing upon public authorities the adoption of the Agreed Form of Contract.

Stamp Duty on Contracts.—Members are reminded that while a 6d. stamp on a contract between private persons or firms makes a contract legal, binding, and enforceable, it is necessary in all

cases where a limited company is a party to the contract under seal, that it should be stamped with a 10s. stamp. If the contract is made "by a duly authorised agent" to the company, signing his hand only, and adding the words, "as agent for X Co., Ltd.," the 6d. stamp is in ordinary cases sufficient. There are some objections to the latter procedure in the event of proceedings being taken, but the balance of convenience and saving of expense is sometimes deemed to outweigh these objections. Members are urged to see that the proper stamp is affixed in the case of contracts or sub-contracts in order that they may be both binding and enforceable, and to consider the expediency of paying the higher duty to place the matter beyond doubt.

Deputation to the Institution of Municipal and County Engineers.—A Deputation consisting of the President (Mr. Smethurst), and Messrs. J. W. White, Jas. Wright, F. Higgs, A. W. Sinclair, Officers of the Federation and the General Secretary, conferred with the Council of the Institution of Municipal and County Engineers, on the 29th October, to explain the views held by this Federation in relation to the present practice of appointing the Engineer to a local authority the sole arbitrator under building and engineering contracts carried out for the said local authority. The representations of the deputation met with a favourable reception by the Council of the Engineers, who, "while unable to believe in the possibility of any unfairness arising from the practice above referred to, expressed themselves very desirous of meeting the views of the Federation, and therefore if our Federation will be prepared to accept the President for the time being of this Institution, or person nominated by him, as Arbitrator under Contracts between Municipal Authorities and members of this Federation, the Council of the Engineers will advise the members of that Institution accordingly." A draft arbitration clause has been submitted for the consideration of the Council of Municipal and County Engineers. It is identical with the corresponding clause in the Agreed Form of Contract except in so far as there is no option left to the parties to select an arbitrator by agreement. It is hoped that an agreement in regard to the arbitration clause will lead to the taking up of the larger question of a model form of contract for municipal and other public works.

Provisional Sums and P.C. Items.—A clause in the form of contract of the West Riding of Yorkshire County Council runs, "all provisional sums and prime cost items (and where the Committee have exercised the option of direct employment, of sums which may have been added for profit, carriage, fixing, etc.) will be deducted from the account of contract in all cases, and the Committee will pay the same direct." A deputation has been appointed to interview the County Council with respect to the above matter and other grievances, and meanwhile members are recommended to object to subscribe to the above condition.

The Yorkshire Federation circularised the Yorkshire Architects, setting forth its desire for the following points of practice to be observed in regard to Tenders and Contracts. (a) Bills of quantities to be supplied wherever works are likely to exceed £300 in value. (b) Bills of quantities to contain an item to cover Workmen's Compensation Insurance. (c) That only the firm whose tender is favourably considered be asked to supply a schedule of prices. (d) That should the work proceed, the firm so supplying a schedule of prices shall be employed. (e) That schedules of prices shall be presented at the office of the Architect and shall be looked over in the presence of the Contractor, and thereupon placed under seal and only referred to for the adjustment of the accounts. (f) That certificates for payment of money due to the Contractor shall be sent to him and not to the building owner. (g) That P.C. sums be avoided whenever possible, but where included, the Contractor to be entitled to a profit of (5) per cent. for incidental costs, be entitled also to all cash discounts, and that retention money be paid in accordance with the agreement, and in case of default, that interest at the rate of 5 per cent. shall be paid on such balance. (h) That the Contract shall provide for the appointment of an Independent Arbitrator. It is reported that these proposals have been substantially accepted by the Leeds and Yorkshire Architectural Society.

Conditions of Tendering.—Protests against conditions have been made to the East Riding County Council, the Warrington Town Council, the County Council Schools, Waterloo, Liverpool, the L. & N.W. Railway Company, the West Riding County Council, the Hants County Council, and the Institution of Civil Engineers. The reply of the latter to the representations of the Deputations of the Officers of this Federation, was shortly, that, while sympathising with us on several matters, they deemed it inadvisable, if not impracticable, for the Institute to formulate a pronouncement applicable to the particular difficulties and grievances in question, and at the same time properly applicable to engineering contracts generally. In the other cases the protests were successful in bringing about important modifications in the conditions. The East Riding County Council Education Committee has decided to supply bills of quantities for all building work which is likely to cost more than £400.

Schedule of Contract Prices for Ordinary Works and Repairs, under H.M. Board of Works.—As a result of the correspondence conducted with the Office of Works, it is stated unofficially that in future a profit of 15 per cent. will be allowed on day-work labour, instead of 10 per cent. as hitherto.

Labour Exchanges.—It having been stated in the Press that a deputation from the Trades Union

Congress were interviewing the President of the Board of Trade on 1st March, with reference to amending the regulations governing the working of the Labour Exchanges, a letter was sent to Sir H. L. Smith referring to the matter, and asking that if as a result of the representations on 1st March, some changes are contemplated in which this Federation may be interested, it would like to be afforded a chance of considering the proposals and of offering observations thereon before they were given effect to. In reply, Sir H. L. Smith stated he was glad to be able to assure the Federation that before any material change is made in the present regulations, full opportunity shall be given for an expression of Federation views.

Unemployment Insurance.—In view of the probable introduction at an early date of a measure to provide for compulsory insurance against unemployment of workmen employed in the building trade, a communication has been sent to the Home Office calling attention to the serious and ever increasing financial burden already borne by this industry to provide for workmen's compensation insurance, stating that much of this is due to the heavy cost of contesting and settling claims and requesting that something be done to remedy these abuses, and that precautions be taken to prevent similar abuses in regard to Unemployment Insurance.

Builders and the New Land Value Duties.—A Deputation consisting of the President, Senior Vice-President, and the General Secretary, attended at the Treasury on 6th October last, by invitation of the Chancellor of the Exchequer, who desired to remove some misapprehension which he thought existed among builders interested in the development of land, as to the effect of the New Land Value Duties and especially of Increment Value Duty upon their business. The interview was fully reported in the press, and copies of the shorthand notes have been printed in pamphlet form and freely distributed to the County Federations for the use of members. Further copies can be had on application. One case illustrated being from actual experience, met with appreciation from the Chancellor of the Exchequer, and enabled him to make some definite pronouncements of an interesting kind and incidentally to promise to clear up some obscure points by subsequent legislation. With regard to the conveying of land direct from the landowner to the purchaser of a house erected thereon, without any intermediate conveyance to the builder, the Chancellor of the Exchequer has made it clear, in response to a special enquiry, that this practice will not be interfered with by the new Finance Act.

Electric Wiring and Fitting Powers.—An injunction having been obtained recently against the Leicester Corporation restraining it from exercising wiring powers without express authority of parliament, the question is being considered as to the best steps to take to safeguard members in regard to other attempts of a like nature.

Departmental Committee on Lead Poisoning.—At the request of the Home Office this Federation, in June, 1909, after conferring with the parties concerned, submitted the names of three gentlemen as properly qualified to represent the interest of Employers of Painters, on the above Committee, viz.:—To represent this Federation, Mr. J. W. Bellamy, of Birmingham; the L.M.B.A., Mr. F. G. Rice, of London; the Nat. Assoc. of Master House Painters and Decorators, Mr. W. G. Sutherland, of Manchester. It was subsequently decided to delay the appointment of this Committee until the Committee appointed to consider a similar question in connection with the Pottery Industry had reported. This report has now been received and it is desired to proceed with the Committee on lead poisoning in the house painting trade. Originally the Federation was asked to submit only two names, but was permitted to submit three, subject to confirmation by the then Home Secretary, Mr. Gladstone, because of the representations made as to the insufficiency of two to properly represent the interests affected. The Home Secretary (Mr. Churchill) after regretting his inability to accept three, asks the Federation to submit two only of the names. The President has written to the Home Secretary suggesting that he retain the three names, but if he cannot, requests him to make his own choice, as it is a matter he (the President) would not like to deal with.

International Federation. Meeting of Provisional Committee.—The Secretary attended a meeting of the above Committee held at Brussels, on 24th October. A report has been sent to the Federations so that they may consider the questions therein raised and instruct their representatives thereon prior to the Annual Meeting.

Midland Centre.

The annual meeting of members of the Midland Centre was held at the Imperial Hotel, Birmingham, on January 12th. The president, Col. John Barnsley, J.P., took the chair, and thirty-seven members were present. The minutes of last half-yearly meeting were read and confirmed. The secretary was instructed to attend the annual general meeting of the National Federation on January 25th.

New Officers.—In the ordinary course, Mr. Albert S. Smith, of Birmingham (senior vice-president for 1910), should have been appointed president for this year. Unfortunately, both he and the junior vice-president (Mr. F. H. Fish, of Nottingham) were prevented through business and other reasons from accepting the office. The following appointments were made:—President, Councillor J. Hardy, Walker (Derby); vice-presidents, Messrs. J. B. Whitehouse (Birmingham), and W. Yates (Leicester); treasurer, Mr. H. Willcock (Wolverhampton); auditors, Messrs. H. Cave (Wolverhampton), and R. Webb (Birmingham).

REPRESENTATIVES.—Messrs. H. Willcock and Albert S. Smith were nominated as the two representatives of the Centre on the Administrative Committee; Councillor J. H. Walker (president), Messrs. F. G. Whittall, J. H. Kellett, and J. Wright, were chosen to represent the Centre on the National Conciliation Board; Messrs. W. Yates (Leicester), W. Wistance (Walsall), J. Stokes (Worcester), F. H. Fish (Nottingham), H. Cave (Wolverhampton), W. Moffat (Birmingham), J. B. Whitehouse (Birmingham), A. W. Chamberlain (Burton-on-Trent), Councillor H. Smith (West Bromwich), and R. Weston (Derby), were elected as employers' representatives on the Midland Centre Conciliation Board; Councillor J. H. Walker, Councillor H. Smith, and Messrs. A. Chambers, F. G. Whittall, F. H. Fish, W. Wistance, H. Willcock, and Albert S. Smith, were appointed members of the National Council; and Mr. W. Smithies was re-nominated as plasterer representative on the joint committee under the N.A.O.P. agreement.

ANNUAL REPORT.—The annual report stated that several difficulties with the operatives occurred during the year, but they were mostly settled by means of the Conciliation Boards without serious friction. Five meetings of the Midland Centre Board had been held, at which two disputes (with the Birmingham labourers and the Mansfield carpenters and joiners) had been settled. In two cases affecting Birmingham carpenters and joiners and Nottingham bricklayers no settlement could be reached. There were 15 local Conciliation Boards, an increase of one. The associations affiliated to the Centre were the same as the previous year, and the membership of most was either maintained or increased. An unsatisfactory state of affairs existed in regard to the North Staffordshire and Nuneaton Associations. On the other hand two associations (at Kidderminster and Sutton Coldfield) were joining the Federation this year. Efforts had been made to get in builders in non-association areas as individual members of the Centre, but up to the present without success. The cash in hand on account of the National reserve fund was £87 11s. 9d., and the sum of £120 became due to the National Federation at the end of the year. The fourth annual Conference of Midland Centre secretaries was held in Birmingham on March 10th last, and was attended by the National secretary. At the suggestion of the Conference, confirmed by the Executive Council, the secretary prepared and circulated among the local associations a report on the inter-trading rule. This rule had now been adopted by the Birmingham, King's Norton, and Northfield, Leicester, Nottingham, West Bromwich, and Wolverhampton Associations. The Executive Council had decided to publish in February a Midland Centre year book and directory, and a sufficient number of orders for advertisements had been received to insure the success of the venture. The most unsatisfactory feature of last year's record was undoubtedly in connection with the collective insurance scheme. The subscriptions from the associations had come in slowly, and one or two showed a falling-off in amount. The report closed with a tribute to the president (Col. J. Barnsley, J.P.) for his unremitting and invaluable services during the past year.

RESOLUTIONS.—The report and balance sheet were adopted. It was decided to hold another conference of Midland Centre secretaries this year. £80 was voted to the National Federation on account of the National Reserve Fund, and the Finance Committee were instructed to consider the best means of raising future instalments. Firm action was taken in regard to the North Staffordshire Association. The meeting approved of the principle of collective insurance, and instructed the committee to make enquiries and to submit a scheme to a special meeting of the Executive Council to be held in June. The meeting also approved of the principle of entering into agreements with organisations of the allied trades which are willing to give advantages in price to members of the Federation. The scheme in regard to an International Federation, sent down by the national secretary, was agreed to. The Emergency, Finance, Collective Insurance, Organisation, and Year-book Committees were appointed. The meeting accepted an invitation from the president to hold the half-yearly meeting in July at Derby.—FRED W. AMPHLET, Secretary.

Wakefield and District.

A meeting of the members of Wakefield and District Master Builders' Association was held at the Great Bull Hotel, Wakefield, on January 5th, Mr. James Pashley (president) in the chair.

A letter was read from the Operative Joiners' Society suggesting that some of the members of the association were not carrying out the working rules with regard to working time during the winter months, and the matter was referred to a committee of the master joiners.

Correspondence was read from the secretary of the Yorkshire Federation respecting the new directory which the Federation were about to issue. It was decided to obtain a supply of copies of the directory and furnish each member of the association with a copy.

The President reported on his visit to the December meeting of the Yorkshire Federation, and several questions which had been brought before the meeting were discussed.—J. BEAUMONT, Secretary.

Tyne and Blyth Federation.

The annual dinner of the Tyne and Blyth District Building Federation was held on January 10th, in the County Hotel, Newcastle. The chair was occupied by Mr. W. T. Weir, president of the Federation.

The loyal toast having been honoured, Councillor Stephen Easton proposed "The National Federa-

tion of Building Trades Employers." He referred to the great value which the Federation had been, first, in the promotion of the National Conciliation Board, afterwards the local Boards, and in the settlement of local disputes. He coupled with the toast the name of Councillor S. Smethurst, the president of the National Federation.

Councillor S. Smethurst, replying, mentioned that the last week he had had the honour of being invited by a bishop to accompany him on a motor tour for the purpose of advising on the laying out of a district in which there would be great developments shortly. Coal had been found, and in a few years there would be thirty or forty pits sunk. The bishop wished advice in the laying out of the land, and on planning and house building. Mr. Easton had referred to the fact that the National Federation had been of use. Their organisation had demonstrated that wherever claims were made that were not fair they were strong enough to deal with it. They had long ceased to have any serious trouble with the operatives. Their organisation had justified its existence by stopping the little harassing things which obtained in the conduct of their business in the past. As far as he knew, they had the very best relations with the trade unions. The Conciliation Boards had come into existence, and in the three important branches a strike was impossible until every other resource had been exhausted. He thought there ought to be an arbitration clause in contracts, and he was glad that the committee of the Architects' Institute had fallen in with their view, and were now considering a form of arbitration clause which they would be willing to recommend. They had also suggested a form of contract of universal application. Builders in the past had, he said, been too much affected by the commercial spirit, and produced what was cheap and often nasty. He looked forward to the time when the members of their association would do work of a quality that they might be proud of, and that their cottage work, as well as more important work, should be such as should endure and be a credit.

Mr. F. W. Ranken gave "The Tyne and Blyth District Building Trades Federation." He said they had already done good work, and more could be done if the members supported them as they should.

Mr. W. T. Weir, president of the Tyne and Blyth Federation, in reply, claimed that their local organisation was as good as any in the country. The Conciliation Board had been extremely useful so far as Tyneside was concerned. Few people knew what good had been done by the Board. They had never had to go to the National Association for the settlement of any dispute. Everything had been settled by conference with the operatives.

The chairman of the local association, Mr. A. Pringle, Newcastle; Mr. T. Anderson, South Shields; Mr. J. F. Newbold, North Shields; and Mr. J. Simpson, Blyth, also responded.

COMING EVENTS.

Tuesday, January 17—Saturday January 28.

ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—Annual Exhibition of Students' Designs and Drawings, 10 a.m., to 8 p.m. (Saturday, 6 p.m.).

Tuesday, January 24—Saturday, February 25.

L.C.C. CAMBERWELL SCHOOL OF ARTS AND CRAFTS, Peckham Road, S.E.—Annual Exhibition of Students' Work. 2 p.m. to 10 p.m.

Thursday, January 26.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY, 10, Park Row, Leeds.—J. J. Woods, A.R.I.B.A., on "The Comacine Guild."

Monday, January 30.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—President's Address to Students, and Presentation of Prizes. 8 p.m.

ROYAL SOCIETY OF ARTS, John Street, Adelphi, W.C.—Frederick Wedmore on "Etching" (Second Lecture). 8 p.m.

LECTURES ON MEDIEVAL ARCHITECTURE, Lecture Theatre, Victoria and Albert Museum.—Banister Fletcher, F.R.I.B.A., on "Parapets, Sculpture, Stained Glass, Church Fittings." 5 p.m.

Tuesday, January 31.

ROYAL SOCIETY OF ARTS, John Street, Adelphi.—F. Douglas Osborne on "The Tin Resources of the Empire." 4.30 p.m.

UNIVERSITY EXTENSION LECTURES.—Banister Fletcher, F.R.I.B.A., on "Ancient Architecture": the Thorne, Lecture Room, British Museum, 4.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS, Canada Chambers, 36, Spring Gardens, Manchester.—Students' meeting. 6.30.

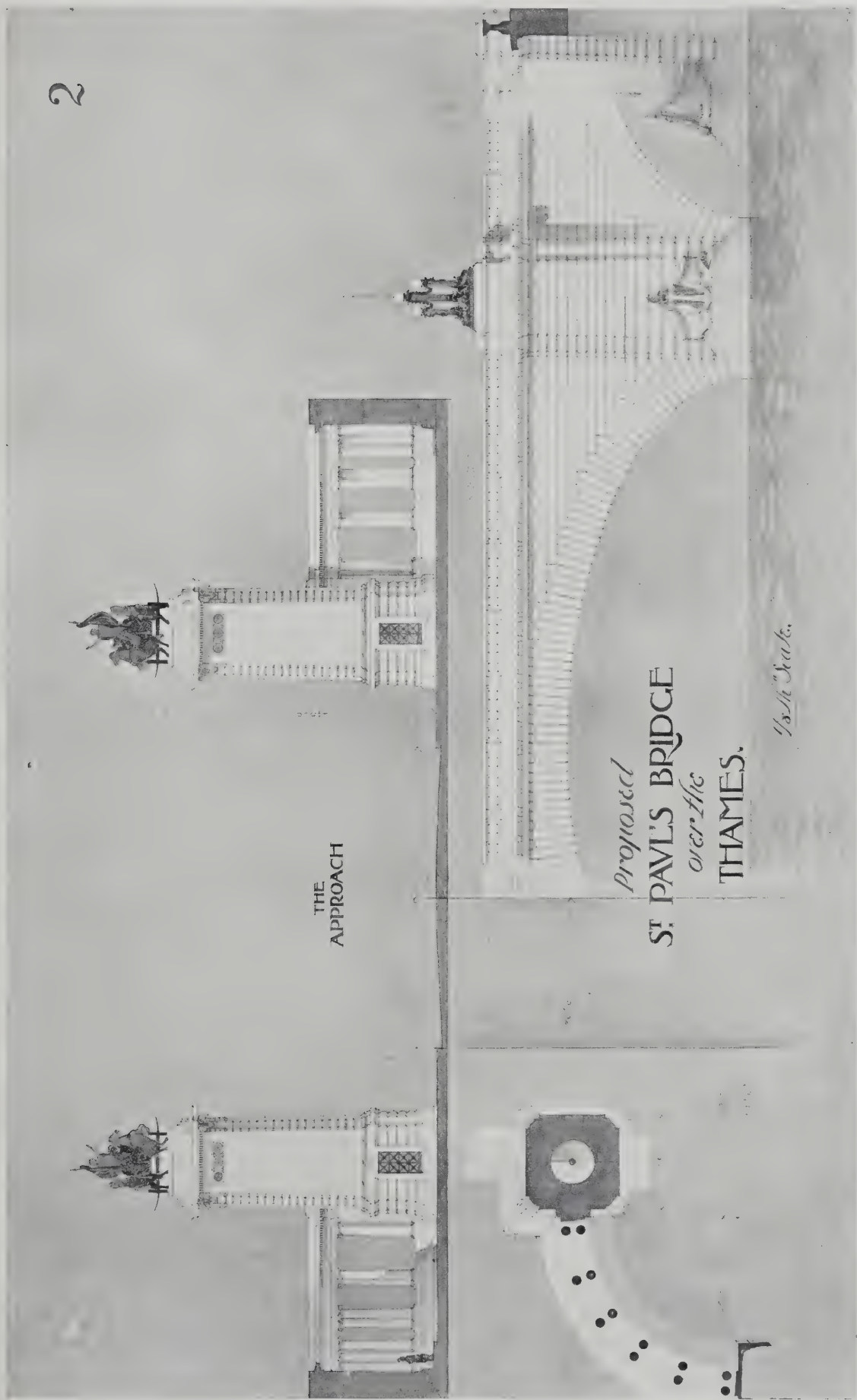
LECTURES ON ANCIENT ARCHITECTURE, Lecture Room, British Museum.—Banister Fletcher, F.R.I.B.A., on "Theatres and Amphitheatres, Circi." 4.30 p.m.

Wednesday, February 1.

WORSHIPFUL COMPANY OF CARPENTERS, Carpenters' Hall, London Wall, E.C.—Henry Tanner, jun., F.R.I.B.A., on "The Art of the Woodworker." 7.45 p.m.

Monday, February 20.

ROYAL SANITARY INSTITUTE, 99, Buckingham Palace Road, S.W.—Charles Porter, M.D., on "Duties of a Sanitary Inspector: Outdoor." 7 p.m.



ROYAL ACADEMY PRIZE DESIGN. BY L. HOLCOMBE BUCKNELL,

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 1st, 1911.

Volume XXXIII.

No. 836



This view shows one of the original old bookcases, in the centre, with its quaint carvings.

BAY OF LIBRARY, ST. JOHN'S COLLEGE, CAMBRIDGE.



Photo: Bedford Lemere and Co.

This view is of particular interest in relation to the competition for the new art gallery and library proposed to be erected at Manchester, as the arrangement of the sculpture court is recommended as a model for the consideration of competitors.

VIEW OF SCULPTURE COURT IN THE ABERDEEN ART GALLERY. A. MARSHALL MACKENZIE, A.R.S.A., F.R.I.B.A.,
AND SON, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

FEBRUARY 1st, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 836.

NOTE: The List of Contents will be found on page V. of the front advertisements.

A Royal Academician on Perspective.

THE apparent difficulties of perspective arise chiefly from the books written to explain it. The geometrical principle governing perspective is really a very simple one, and anyone who has mastered it ought to be able to apply it to the construction of any figure by the exercise of a little reasoning; but books on perspective are almost always written as if the object were to do all the draughtsman's thinking for him, and he is presented with a host of diagrams for putting this, that, and the other kind of object into perspective, all of which are only various applications of the same process. The consequence is that the beginner is alarmed by a crowd of complicated diagrams which lead him to think that the subject is much more abstruse than it really is.

Mr. Storey's book* is no exception in this respect. There is far too much of it, the object being apparently to work out every possible problem for the student. What is the use, for instance, of a special section showing "How to draw a hexagon in perspective"? Anyone who has learned how to find the position of a point in the picture, and how to draw a circle in perspective, should be at no loss over a hexagon or an octagon. "How to draw a circle in angular perspective" actually suggests a special problem which does not exist; a circle in perspective is a circle in perspective, whether any square by which it is contained is seen in parallel or in angular perspective. And there are other points in which

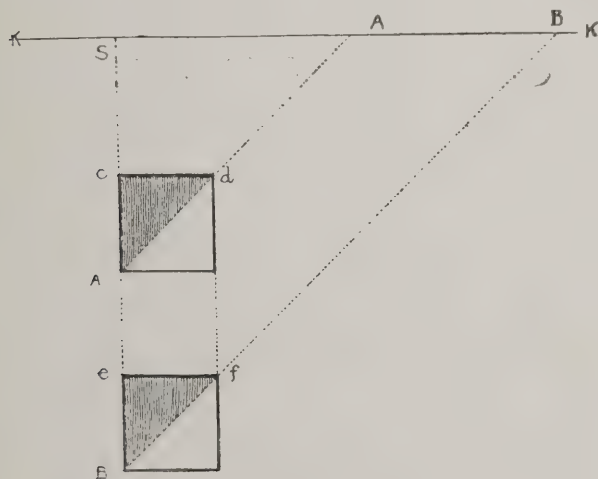


FIG. 11.

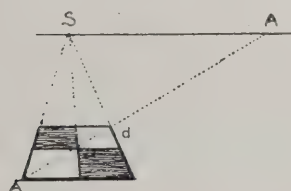


FIG. 12.

Fig. 1.

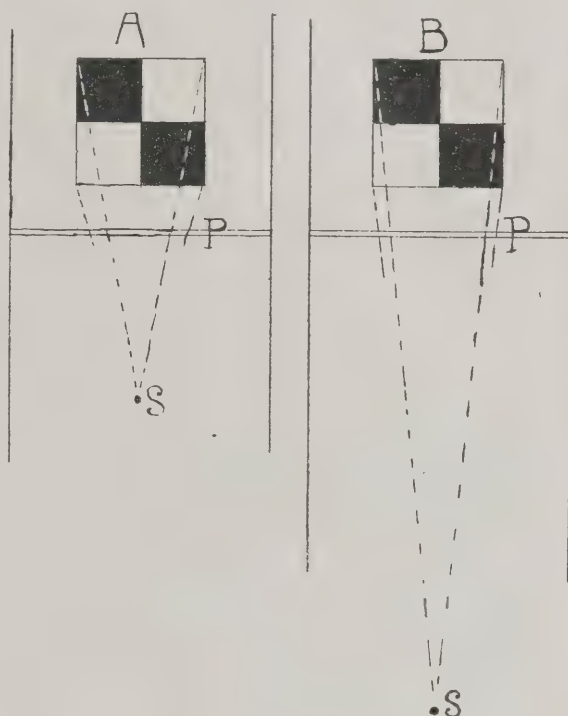


Fig. 2.

the author seems to be confused in his own mind, or at all events confuses the mind of the student.

In Figures 11 and 12, for instance, which we will call for our purpose Fig. 1, the object apparently is to show that a too near point of view of a pavement tends to give a bad impression in perspective. The two squares (*cd*, *ef*) represent, we are told, "the ground plans of two squares at different distances from the picture," and the spectator is first at A, the corner of the near square, and then at B, the corner of the further square. If the spectator is in each case close to the angle of the square he will see both in the same way, in angular perspective; and the matter is further complicated by showing the result below as a square in parallel perspective. We can hardly imagine an explanation more absolutely confusing to the student. It was only after some consideration that we arrived at a conclusion as to what the author probably meant; he seems somehow to have confused the distance of the spectator from the picture-plane with the distance of the object. What we presume that he meant, or should have meant, may be more intelligibly explained in this way. Fig. 2 represents the plan of a chequered square, to be put into perspective on the picture-plane P, on the left with a near station-point (S), on the right with a more distant one. The dotted lines drawn to S give the perspective widths in the two cases; in the sections on Fig. 3 the dotted lines give the perspective heights on the picture-plane, where they cut the picture-plane at *cd* and *ef*. Fig. 4 shows the two results; A for the near point of sight, B for the distant one. We think that explanation will be intelligible to any reader; the author's certainly is not.

There are other statements in the book which we cannot accept, and which likewise seem to imply a confusion of perception. For instance, it is stated (page 19) that "if we

*The Theory and Practice of Perspective. By G. A. Storey, A.R.A., Teacher of Perspective at the Royal Academy. Oxford: Clarendon Press: 1910.

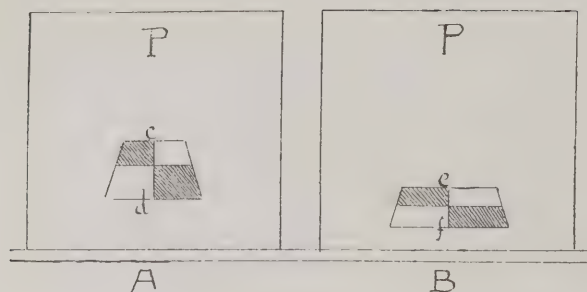


Fig. 4.

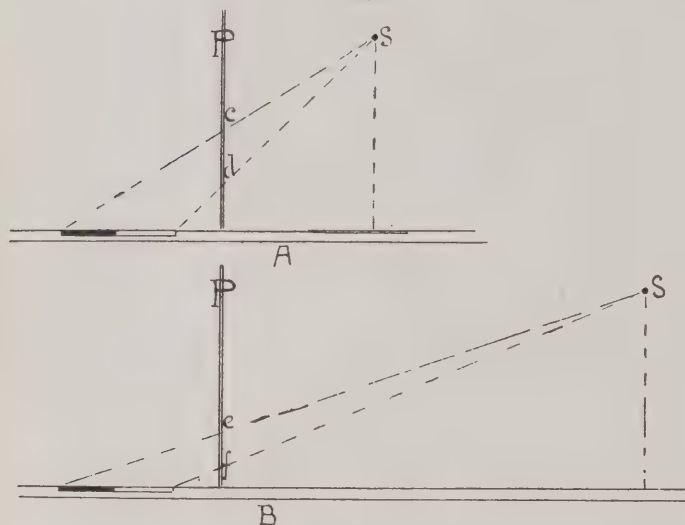


Fig. 3.

represent a domestic scene in a small room, we must not make our distance-point too far off, as it would exaggerate the size of the room" (!) Every practised architectural draughtsman knows that to give a correct impression of the size of a perspective interior it is necessary to assume an imaginary point a considerable distance away from the room, which will otherwise appear to have an exaggerated length owing to the sharpness of the perspective. Fig. 5 shows two perspective interiors laid down from the same plan; A from a near point of view, B from a distant one. Which looks the longer? The author's own two sketches on page 35, to show the disadvantage of a too near point of view of an interior, illustrate the same fact; the one with the near point of view looks a great deal longer than the other.

Painters seem to have rather a confused idea also (as we have noticed in other works) as to the effect of the curvature of the earth on sea horizons. Mr. Storey tells us categorically in a footnote, that "in a sea-view, owing to the rotundity of the earth, the real horizontal line is slightly below the sea line." Does he suppose, then, that the surface of the sea *rises* in a curve between the spectator and "the real horizontal line"? It has that appearance, no doubt, under some circumstances. If you follow with the eye the curve of a bay some fifteen miles across, you find that as the coast-line curves outwards and onwards, the beach and

the lower strip of the land disappear, the curve of the sea cutting them off, and appearing, in a sense, to rise between the eye and the distant land; but the real fact, of course, is that the whole surface, beach and all, is curving downwards, till eventually the beach, at the further side of the bay, disappears behind the sea line. In other words, from the spectator's standpoint the curve of the earth is continually dropping, and therefore the imagined horizontal line, which is theoretically on a level with the spectator's eye, is above and not below the sea horizon. It makes small difference in practice, but we may as well have the facts correct.

But the most curious statement in Mr. Storey's book is one which we find among the "Rules of Perspective"; "All horizontals which are at 45 deg. to the picture-plane are drawn to the point of distance." This is connected with what seems to be a wide-spread fallacy with the writers of perspective manuals generally, viz., the idea that there is some sacred necessity for the lines from the eye which give the two points of distance forming an angle of 90 deg. Apparently this is because perspective is generally illustrated by diagrams of rectangular objects. But even in that case it does not follow that either distance point should form an angle of 45 deg. with the picture-plane. An architect lays down a plan of a rectangular building sufficiently canted from the picture-plane to get what he thinks will be the best effect, and he finds his distance points for each face of the building by drawing lines from the point of sight to the line of the picture-plane parallel with the two sides of his plan; they form an angle of 90 deg. *because the plan of the building does*, but probably neither of them is at an angle of 45 deg. with the picture-plane. But Mr. Storey seems to think that the distance point is something got by a line at an angle of 45 deg. with the picture-plane. In the diagram Fig. 6, which is traced from his book, he points out that the angle at A being (on plan) less than a right angle, its line is not produced to the point of distance (C in our diagram) but to the point B. But the point B is the point of distance. Suppose that line were part of the plan of one of the modern American cities all built on an oblique line; then B would be the point of distance for the whole

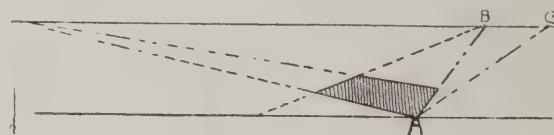


Fig. 6.

drawing. The assumption that the point of distance has anything necessarily to do with an angle of 45 deg. is a mere superstition. The real position may be expressed thus:—

The point of distance represents the relation between the actual direction of lines in the scene, and the position of the spectator.

If writers on perspective would get that axiom into their heads it might clear their minds (and their books) a little, and show them that there is no fixed angle for finding distance points, and that the angle by which they are found depends entirely on circumstances.

We have generally observed that painters are not very strong in perspective, as it is understood by architects; we remember how a very eminent painter was found painting the interior of a temple from an elaborate model, confessing that he could not get the perspective right otherwise; and we often see domes and curved cornices very badly drawn in pictures of buildings. Mr. Storey is evidently much better up in the subject than most painters; his illustration of the method employed by architects in setting out perspectives is quite correct (we have been told by painters that "they cannot understand it the least"); and we owe him recognition for one very ingenious suggestion for getting over the inconvenience of a distance point far out of the

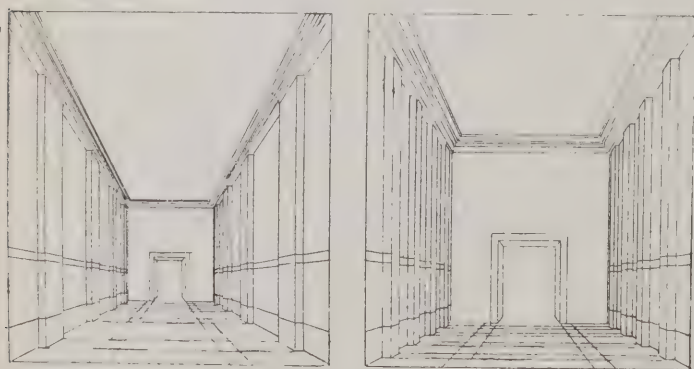


Fig. 5.

himself. Mr. C. H. Shannon is in rather a different position; there is still a good deal of difference of opinion as to the merits of his paintings, which are attempts to give poetic significance to combinations of figures sometimes rather eccentric and unbalanced in style and composition; but he is, no doubt, a very clever and original painter, and his election, like that of Mr. Hornel Moor three years ago, seems to indicate a desire on the part of the Academy to adopt a rather more catholic spirit in Art than it was formerly credited with.

The Mall Improvement.

IT is a very unfortunate and undignified termination to the scheme of a great national memorial that two public bodies should be found fencing and (on one side) cheese-paring as to who is to have the responsibility of completing it. The sudden backing out of the Office of Works from what was almost an understanding to contribute £50,000 in favour of the reduction of that amount by one-half, is not a creditable thing to the Government in the case of the memorial to a great Sovereign. The latest move of the London County

Council to contribute £75,000 on condition that the Office of Works complete the scheme, and relieve the County Council of all responsibility, looks rather like a piece of temper—not quite inexcusable; but at all events the County Council have shown a right spirit in stating as one reason for the increase in their offer that “if the Council contributes at all to a great national memorial, it should do so in a free and generous spirit”; in other words, if the Government is stingy, we will set a better example. It would certainly be best now that the Government should accept this offer and complete the scheme. Sir Melvill Beachcroft, in a letter in the “Times” of Friday, thinks the County Council are improperly giving up their official duty of carrying out a street improvement; but he forgets that in Sir Aston Webb’s original design, as selected in the competition, the continuation of the memorial road into Charing Cross was part of the scheme. That was before the present terminal building with its three arches was thought of; and it is hardly fair for the Office of Works to say now, that their responsibility stops with that building, which was no part of the original design. So far, we think the London County Council certainly has the best of the argument.



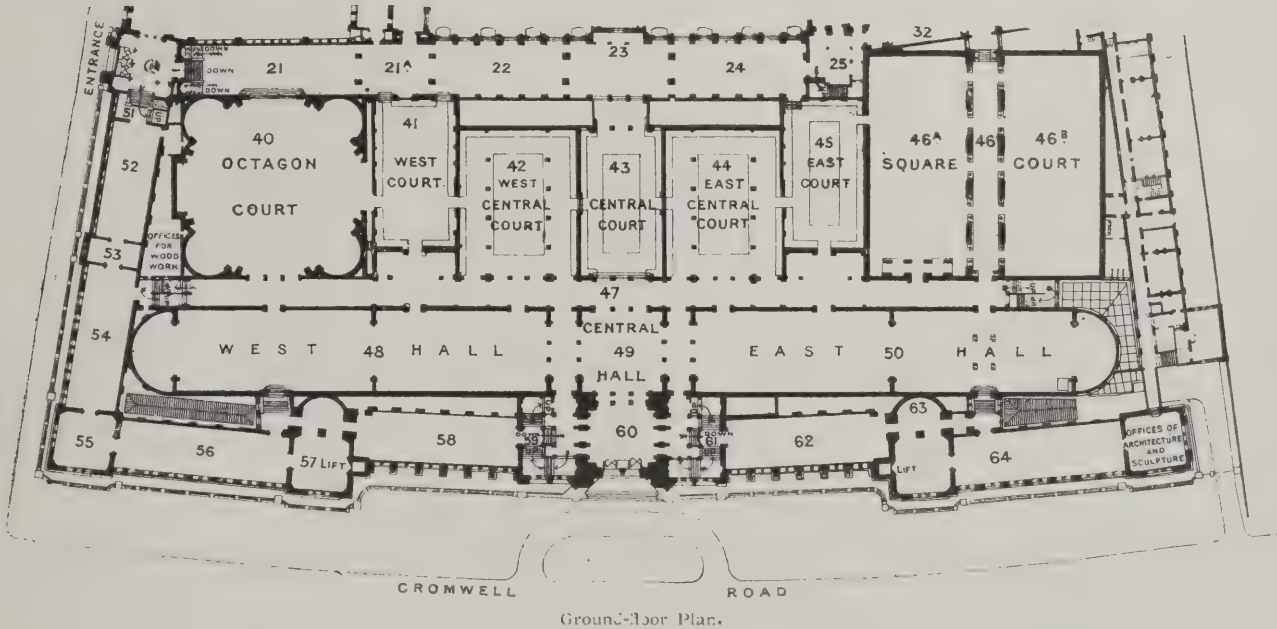
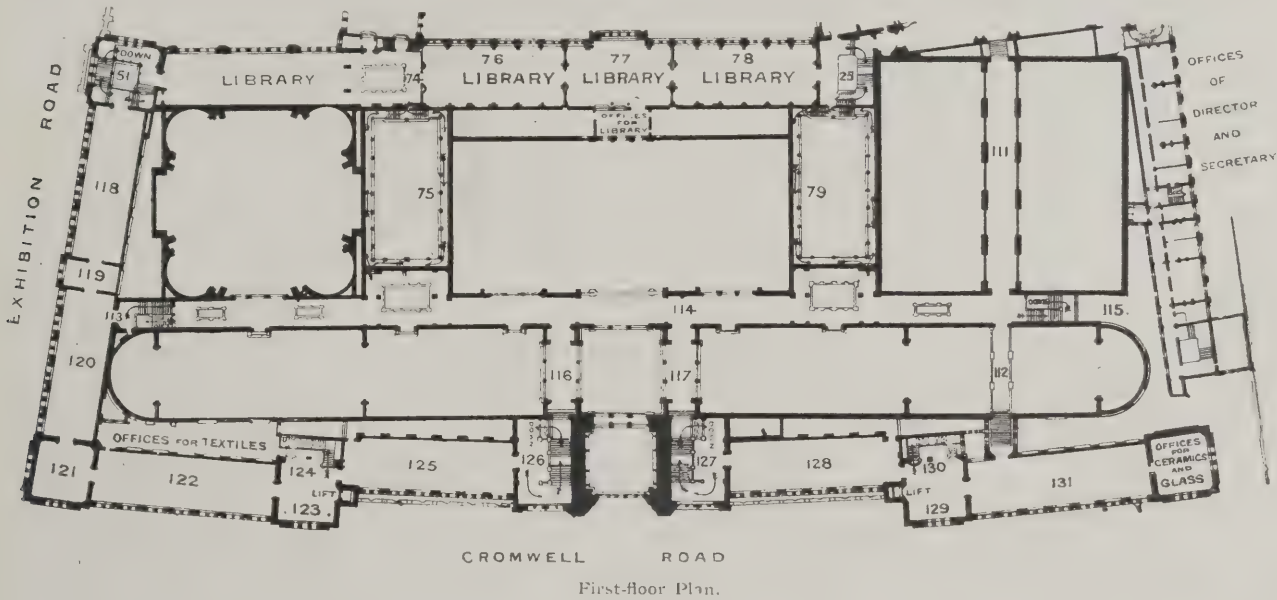
VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON WEST CENTRAL COURT. SIR ASTON WEBB, C.B., R.A., ARCHITECT.

THE PLANNING OF ART GALLERIES.

A number of enquiries having reached us with respect to the competition for the new library and art gallery which is to be erected on the site of the old Royal Infirmary at Manchester, we publish in this issue some examples of work of this character that may be of some help to intending competitors. The conditions of the competition draw particular attention to the sculpture gallery of the Art Gallery

yards of which would be occupied by a central court." The site of the proposed new building is perhaps the most important local centre in Manchester. It is four-sided, that to Piccadilly being the longest. Both sides of the site converge rather abruptly towards Parker Street, the thoroughfare at the rear. The site, it is interesting to note, bears considerable resemblance to those of two of the most notable buildings of this class of recent years—the Victoria and Albert Museum at South Kensington, de-

galleries and courts at South Kensington, being intended for exhibition purposes, were intentionally kept perfectly plain; and it will be seen from the plan that galleries of undue length have been avoided. The provision of vistas, and glimpses through the building in passing, afford an added interest. The long gallery gives convenient access to all the courts on each side, and the courts on the north side of the gallery neither oppose barriers to the visitor nor confuse him as though in a maze. Flanking the domed

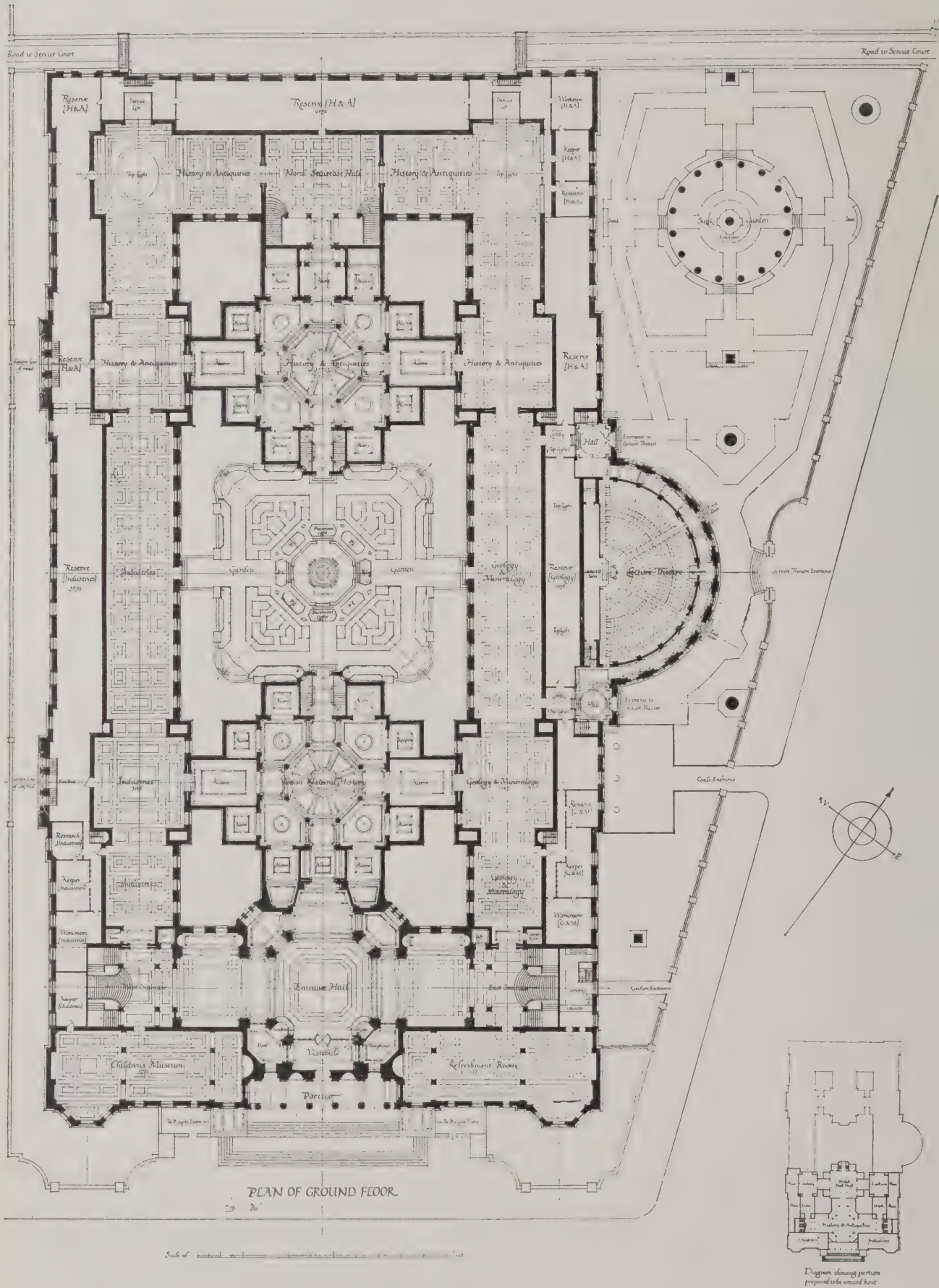


VICTORIA AND ALBERT MUSEUM. SOUTH KENSINGTON. SIR ASTON WEBB, C.B., R.A., ARCHITECT.

at Aberdeen, of which a view is given on page 108. The following is the wording of the reference in the conditions: "For sculpture the attention of competitors is called to the arrangement at Aberdeen, where a central sculpture court, with aisles all round, and with a balcony over, is provided, surrounded by rooms, containing courts for collections such as Egyptian, Assyrian, Greek, Græco - Roman, Renaissance, Italian, French, German, Celtic, and Modern. 1,500 square yards will be required for the exhibition of sculpture, 600

signed by Sir Aston Webb, and the National Museum of Wales in Cathays Park, Cardiff, the competition in connection with which was gained last year by Messrs. Smith and Brewer. Plans of both these are here given, which, although the buildings are exclusively museums, should be found useful as indicating the arrangement of two very successful schemes. The west central court of the Victoria and Albert Museum is of considerable interest by reason of its skilful combination of the coffered ceiling and an arrangement of overhead lighting. The walls of all the

central hall are the long eastern and western galleries, 50ft. wide, in which the larger architectural exhibits are now placed. The west and east central courts, leading from the central court that forms the main entrance to the older portions of the museum, have their naves and aisles divided by arcades. The plan of the National Museum of Wales is rather less complicated in consequence of its regularity; and the arrangement of the various departments provides a wholly admirable example of formal planning.



NATIONAL MUSEUM OF WALES, CATHAYS PARK, CARDIFF. SMITH AND BREWER, ARCHITECTS.

COMPETITIONS.

The New Australian Capital.

Considerable interest is being manifested in the new Australian capital city, for which a site has been chosen at Canberra, New South Wales, and for which £43,000 has been appropriated by the Commonwealth Government for initial preparatory work. The Minister for Home Affairs of Australia, under whose supervision the capital will be built, states that he will shortly call for designs from all over the world for the federal capital city, and also for the new Parliament buildings, but it will probably be two years yet before the construction of the new city is seriously undertaken.

Leeds Architects and a Douglas Improvement.

Messrs. Percy Robinson and W. Alban Jones, of Leeds, are the successful architects in the competition for the lay-out of the Villa Marina estate on the Douglas sea-front. This estate was acquired by the Douglas Town Council at a cost of £60,000. The accepted design provides for the erection of a diagonally shaped concert-hall next to Broadway, and various reading, refreshment, and other rooms. The grounds will be so laid out as to allow for three main avenues, each having a sea view. It is not thought possible to have the scheme completed for the coming season.

Romford Garden Suburb.

We understand from the Exhibition Committee that the result of the architectural and building competition for houses and cottages to be erected in Gidea Park this summer has been very satisfactory. More than 300 architects submitted designs for houses and cottages, of which about 100 will be erected. The entries for the competition for a town plan in Gidea Park remain open until March 31. The first premium is £100, the second £50, and there is a special prize of £25 for a perspective drawing of part of the proposed lay-out. The assessors are Mr. E. Guy Dawber, F.R.I.B.A., Mr. H. V. Lanchester, F.R.I.B.A., and Mr. Mervyn Macartney, F.S.A., F.R.I.B.A. The competition should prove an attractive one to architects, as the area to be laid out presents no exceptional difficulties, and the work involved is of nothing like so serious or extensive a character as was involved in the recent town-planning competition for 1,300 acres at Ruislip. The rapid development of the Romford Garden Suburb (as Gidea Park is called) affords an assurance that the successful designer may hope to see his plan carried out at no distant date. The area to be planned is approximately 300 acres, intersected by the Romford Golf Course, and the Roman road leading to Romford.

A Swansea Competition.

In connection with the proposed widening and rebuilding of Castle Street, Swansea, the sub-committee of the Corporation recommend (1) that Mr. S. S. Reay, F.R.I.B.A., of Bath, be nominated assessor at a fee of 50 guineas; (2) that the author of the design placed first be paid a commission of 2½ per cent. on the cost (not exceeding £10,000) of the elevation of the buildings; the intention being that such commission is not to exceed £250; and (3) that the author of the design placed second receive a premium of £50; the first and second premiated design to become the property of

the Council. The following suggestions were made respecting the instructions to competitors, drawn up by Mr. Reay:—That as regards the general character of the designs to be invited, the elevation of the buildings at the corner of Castle Street and College Street be adopted, and that photographs of such buildings be supplied to competitors with the instructions; that the front elevation be of stone; that competitors may provide breaks, provided the street be not less than 60ft. wide; that piers be allowed in the designs; the conditions of letting to provide that in the event of one lessee taking more than one plot the Council reserve a discretion to allow a certain degree of latitude with regard to the piers, entrances, etc., so long as the essential features of the scheme are not interfered with.

LIST OF COMPETITIONS OPEN.

FEB. 25. COTTAGE HOSPITAL, ST. AUSTELL.—Architects practising in the County of Cornwall are invited to submit designs for a cottage hospital to be erected on the Trewoon Road, in the Town of St. Austell. The estimated cost must not exceed £1,500. Three premiums, viz., £12 12s., £8 8s., and £5 5s., are offered for the three sets of plans which the committee may select, the premium of the finally selected architect to merge into commission. Designs to be sent to the Hon. Secretary, Mr. Henry Hodge, C.C., Trevarrick, St. Austell, by February 25th, 1911.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Premiums of £15 and £10 are offered. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee E. Pearson, Corbridge.

MARCH 1. FREE LIBRARY, PENISTONE.—Competition limited to architects within thirty miles of Penistone.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 26.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125, for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

BOOK NOTICES.

The Cathedral Churches of England.

This is not a book for architects, being rather in the nature of a guide-book to the English cathedrals for general readers; but it is much better done than such books generally are, and seems to be the result of a great deal of careful study of the subject. One object of the writer has been to give such information as is extant in regard to history of the foundation of each cathedral. The characteristics of the various styles of Gothic are sufficiently described in an introductory chapter, though we doubt if they will be practically intelligible to general readers in the absence of any illustrations to explain the wording; a few very small illustrations, just showing what kind of thing is meant, would not have cost much, and would have made all the difference in making the subject intelligible.

No plans at all are given, as to which again we may say that even very small plans would have been better than none; and to describe the buildings without a single plan is a fatal error from our point of view; though we know that popular readers, and publishers of popular books, always fight shy of plans, which seem to puzzle and distress them.

With this indifference as to plan it is of course not surprising that no reference is made to the superiority of Wren's first plan for St. Paul's, nor to the peculiar construction of the dome; and that the author has failed to realise that Peterborough façade is placed in front of a previously commenced less ambitious design, an event undoubtedly provoked by a desire to surpass the new west front of Ely. It is an amateur book in every sense, but it is a great deal better than the general run of amateur books.

The Cathedral Churches of England: their Architecture, History, and Antiquities. By Helen Marshall Pratt. London: John Murray; 1910, 10s. 6d.

Land Law and Registration of Title.

Although it may be painfully true that "the man who is his own lawyer has a fool for his client," it is nevertheless incumbent upon architects, surveyors, and builders to know sufficient of the laws which affect their respective interests to ensure themselves against absolutely groping in the dark in the transactions in which some glimmering at least of legal knowledge may prevent serious misadventure. This book, which modestly professes to be no more than "a comparison of the old and new methods of transferring land," imparts, in the process, a very considerable amount of knowledge that may be turned to good account in professional practice. It is the kind of book which may be read with interest and kept at hand for consultation when guidance is needed; although we are sorry to find that our recommendation of it on the latter ground is to some extent discounted by the absence of an index. The contents, however, are set out analytically.

The plan of the book implies a glance at the history of the land laws, so far as they directly affect the comparison of methods of transferring real estate. The law of real property in England had, by the beginning of the nineteenth century, become extremely complex and obscure. A most exhaustive enquiry into it was conducted by the Real Property Commissioners of 1828, who issued three reports, in which a great number of changes were proposed, of which the most important was the establishment of a register of deeds, which the author describes as "a sort of half-way

house to a register of titles," in which the deeds, though sorted and indexed by the Registrar, are not examined by him. In 1854, a Royal Commission was appointed, and upon their report, in 1857, were successively based Lord Westbury's Act of 1862, "to facilitate the proof of title to, and the conveyance of, real estate," and Lord Cairns's Land Transfer Act, 1875, which superseded Lord Westbury's Act. The Act of 1875, however, was virtually inoperative; and in 1897 the Land Transfer Act was passed, amending the Act of 1875, and providing a State guarantee of title, and making possessory registration compulsory. The system was specifically adopted by the London County Council in 1899. Upon the petition of the L.C.C., the Government in August, 1908, appointed a Royal Commission to enquire into the working of the Land Transfer Acts, and that is as far as the history goes.

The author proceeds to discuss in detail the merits of the old and the new systems, taking in sequence interests in land, charges upon land, wills in their bearing upon succession, settlements, intestacy, the law of mortmain, limited ownership, the uncertainty of titles, vendor and purchaser and fraud, the Statute of Limitations; the "preference of the legal estate," the ideal register, registration under the Land Transfer Acts of 1875 and 1897, a criticism of these Acts, possessory registration, and a summarised description of alternative forms of registration. The author's chief endeavour throughout the book is to show that the root cause of the difficulty of the transfer of land is the complexity of the law of real property and of the transactions permitted, and he advocates the placing of the dealings with land under the care of the State. He believes that the great body of dealers with land will be prepared to put up with the trouble and expense that will be necessarily involved in the formation of the register, "if the land can be thereby relieved of the incubus which now weighs so heavily upon it, impairing its marketability and value—the retrospective investigation of title."

Land Law and Registration of Title: A Comparison of the Old and New Methods of Transferring Land. By Eustace J. Harvey. Pages x.—278, 6ins. by 9ins. Longmans, Green, and Co., 39, Paternoster Row, London; New York, and Calcutta. 7s. 6d. net.

OBITUARY.

Mr. John MacWhirter, R.A.

Mr. John MacWhirter, R.A., who died on Saturday last at his house in Abbey Road, St. John's Wood, was a native of Slateford, near Edinburgh, where he was born in 1839. He exhibited his first picture (at the Royal Scottish Academy) when he was only 14. He then entered the art schools, which were under the direction of Robert Scott Lauder. He was elected A.R.A. in 1879, and R.A. in 1893.

Mr. Herbert Lawford.

Mr. Herbert Lawford, of the firm of Messrs. Lawford and Sons, builders' merchants, of London, N.W., who died on November 23rd last, left estate which has been proved at £43,133 gross.

Mr. James Rushton.

The death is announced of Mr. James Rushton, head of the firm of J. and J. Rushton, slaters and contractors, of Bacup and Littleborough. The firm is widely known and has carried out large contracts, chiefly in connection with mills and factories, in many parts of Lancashire. Mr. Rushton, who was about 60 years of age, had been suffering from an internal complaint for some time.

NEWS ITEMS.

A Partnership.

Mr. Richard H. Owen, Mr. E. M. Whitaker, and Mr. E. Lawrence Hall have joined in practice as consulting engineers at 1, Gresham Buildings, Basinghall Street, E.C. The style of the firm will now be "Whitaker, Hall and Owen."

* * *

A Business Announcement.

The Western Electric Company, Ltd., Norfolk House, Victoria Embankment, W.C., North Woolwich, etc., announce that they have now opened branch offices in the following towns, where their representatives will give personal attention to enquiries for cables, telephones, and electrical supplies, namely:—King's Court, 115, Colmore Row, Birmingham; Standard Buildings, City Square, Leeds; 2, Bank Buildings, Cardiff.

* * *

A Grass Plot in Gray's Inn Square.

The Benchers of Gray's Inn propose during the present year to remake the roadway and pavements of Gray's Inn Square, and at the same time to make certain improvements in lay-out of the central space. It is intended that there shall be a grass plot approximating one-third of the whole area, enclosed by a granite kerb and possibly by a short iron palisade. The plan provides for the planting of a row of trees in the space to be left as roadway, such trees being planted nearer the middle of the square than those which are already in position. Provision is also made on the plan for the statue of Sir Francis Bacon.

* * *

Corporation Action Against an Architect.

The action brought by the Leicester Board of Guardians against Mr. John E. Trollope, one of the architects of the North Evington Infirmary, for alleged negligence and breach of agreement, the question being mainly one of responsibility for the occurrence of dry rot, was concluded in the King's Bench Division on January 25th, before Mr. Justice Channell. In delivering judgment in favour of the plaintiffs, his lordship said that "On the main question he must hold the defendant responsible. He was sorry it was so, because it was a serious liability, and defendant had behaved extremely well." Particulars of the case are held over for a future issue. The amount of damages was not determined.

* * *

Northern Architectural Association and Registration.

In the rooms of the Northern Architectural Association, at 6, Higham Place, Newcastle-on-Tyne, on January 25th, Mr. J. S. Gibson, of London, past vice-president of the Royal Institute of British Architects, delivered an address upon "The Policy of the Royal Institute, and the Advantages of the New Class of Licentiate." The chair was occupied by Mr. H. C. Charlewood (President of the Northern Architectural Association). Mr. Gibson, in the course of his address, explained that the object of establishing the new class of Licentiate R.I.B.A. was to get, if possible, the whole of the practising architects and senior assistants into the Institute, so that that body could proceed immediately with the preparation of a Bill to obtain statutory qualification for architects. The ranks would thus be closed in the same way as were the ranks of the medical and legal professions. The class was opened last March, and would be

closed next March, and up to the present six hundred new members had joined under it, and two hundred other names were under consideration. Before next March it was hoped to bring the total number of new members up to one thousand. The present membership of the Royal Institute was over three thousand.

* * *

"Bitumastic" for Tanks.

As this is about the time of year when breweries, ice works, etc., overhaul their refrigerating plant, it is interesting to note that Messrs. Wailes, Dove and Co., 5, St. Nicholas Buildings, Newcastle-on-Tyne, have just completed coating with their patent "Bitumastic" solution and enamel a large tank at Mitchells and Butler's Brewery, Birmingham, which was built by Cutlers of London, for the Linde British Refrigeration Co. This tank is one of thousands that the "Bitumastic" enamels have been applied to with excellent results, both as a protection against corrosion and as a preventive of leakage that might otherwise occur. "Bitumastic" enamels, when once applied, form a permanent coating, and do not in any way taint the water that passes through the tank. For the protection of condenser coils, ice moulds, and all refrigerating plant, "Bitumastic" is recognised as a standard article. Its proprietors secured gold medals at the Franco-British and Japan-British Exhibitions.

OUR PLATE.

Design for St. Paul's Bridge.

The conditions of the above subject, for which the Royal Academy prize was awarded to Mr. L. H. Bucknell, whose drawings are reproduced in our centre plate, were that a new road should be constructed continuing that at the east end of St. Paul's Cathedral, passing over Queen Victoria Street and Thames Street, and crossing the river by means of a new bridge at a given point east of St. Paul's Wharf.

It is suggested that the new road should widen at the approach to the bridge, forming a small "place" surrounded by office buildings in connection with wharves.

THE LIVERPOOL KING EDWARD MEMORIAL.

A meeting of the Liverpool King Edward Memorial Committee was held on January 26th, the Lord Mayor presiding. On the motion of Lord Derby, seconded by Alderman Williams, it was unanimously resolved that the site of the equestrian statue which the citizens are about to erect should be at the south front of St. George's Hall. The commission for the statue was placed in the hands of Mr. Goscombe John, who prepared a model to be placed on the site. It will be remembered that the original proposal aroused considerable criticism, and that a committee of eminent experts was called in to advise on the scheme. A model of an equestrian statue prepared by Mr. Norman Shaw on different lines from those followed by Mr. Goscombe John was submitted to the committee. It was decided to adopt Mr. Goscombe John's scheme as amended by Mr. Norman Shaw. Sir Lawrence Alma-Tadema approved of the amended design.

We understand that the amended scheme, which has yet to be submitted to the Corporation for approval, is likely to be strongly opposed by those who would prefer that this façade of St. George's Hall should be left severely alone; which opposition is supported, we hear, by a protest from the R.I.B.A.

NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS.

The half-yearly general meeting of the National Federation of Building Trades Employers was held in the Balmoral Rooms of the Trocadero Restaurant, Shaftesbury Avenue, on Wednesday, January 25th, when there was an attendance of about 100 members. At the commencement the chair was occupied by Councillor Smethurst, J.P., retiring President, and afterwards by the newly elected President, Mr. J. W. White.

Attention was drawn to a strike that had occurred at Manchester, where members of the National Association of Operative Plasterers ceased work to show their sympathy with the operative plumbers. This action was characterised as a breach of the national agreement subsisting between the operatives and the National Federation, which requires disputes to be referred to a Board of Conciliation; the local branch of the operatives try to justify their action by claiming that they had struck as individuals, and not as a trades union, and had done this by way of protest.

The President said this was a serious matter, as it made the agreement appear to be worthless, and advised the Manchester Association to bring the matter before the Conciliation Board. It is understood this is being done.

Attention was drawn to the proposals under consideration for an improvement in conditions of contract in regard to the money clauses, and the provisions in regard to the employment of sub-contractors, and p.c. provisional sums; and explanations were given as to the steps that were to be taken in regard thereto. It was mentioned that the Newcastle Association had latterly been holding conferences at which conditions of contract and their bearing upon the relations between the parties to them were the subject of illustration and discussion, and that these conferences had proved interesting and instructive, and might with advantage be initiated by other associations.

Some discussion took place in regard to finance, and a proposal to consider the advisability of reducing the contribution rate to the reserve fund was referred to the Administrative Committee for consideration and report.

Attention was drawn to a flagrant case of withholding the final balance on a contract due and certified by the architect as such, and same Committee was requested to look into the matter and advise thereon.

A discussion took place on the question as to whether it was justifiable to enforce a literal interpretation of specifications where the description of materials called for had become obsolete, and instances were given where stone was specified to be obtained from a quarry which had actually become disused and filled up, and where timber was specified which was no longer marketed, the source of supply having become exhausted, and it was contended that it was absurd to expect specifications of this kind to be adhered to, but it was pointed out that legally such specifications were enforceable, and therefore the proper course was for the contractor to refuse to sign such specifications.

Discussion also took place on the desirability of adopting a holiday scheme, so that the holidays of the whole of the staff in builders' offices could be got through in the three weeks comprised in the week prior to the August Bank Holiday, the bank holiday week, or the week following it, instead of extending, as they generally did, through the principal summer months.

The proposal is to be sent to the local branches for further consideration.

The question of affiliation to the International Federation of Building and Public Works Contractors, a newly formed organisation intended to combine the building trade of the principal European countries, was considered, and it was decided to refer the matter to the branches for further consideration. In the course of the discussion it was stated that the benefits which might be expected to result from joining the International Federation were shortly:—Interchange of information and facilities for obtaining special workmen or special goods; a general improvement of the relations between masters and workmen on the Continent due to spread of information, and especially through the example of this country, tending to modify the present aggressive type of Continental socialism and syndicalism, which is now a very bad example to our workmen, and probably is responsible for the recent repudiations by the rank and file of agreements negotiated by trades union officials; the greater consideration which the building industry will enjoy by reason of its international organisation, and the off-set such an organisation will represent to the corresponding workmen's international organisation; and the general trade advantages which accrue to us all by becoming better known to each other.

The Secretary then announced the election of officers for the new Executive Council, and the nominations to the National Board of Conciliation, also to the N.A.O.P. Joint Committee of Appeal.

The report of the new Executive Council was then read, including the recommendations for the election of President and officers; and the names of the Administrative Committee were announced, and were confirmed by the general meeting, as follows:—

President, Mr. J. W. White. *Vice-President*, Mr. Jas. Wright. *Junior Vice-President*, Mr. Frederick Higgs. *Treasurer*, Mr. W. Thomas. *Senior Auditor*, Mr. A. W. Sinclair. *Junior Auditor*, Mr. W. F. Wallis. *Administrative Committee*.

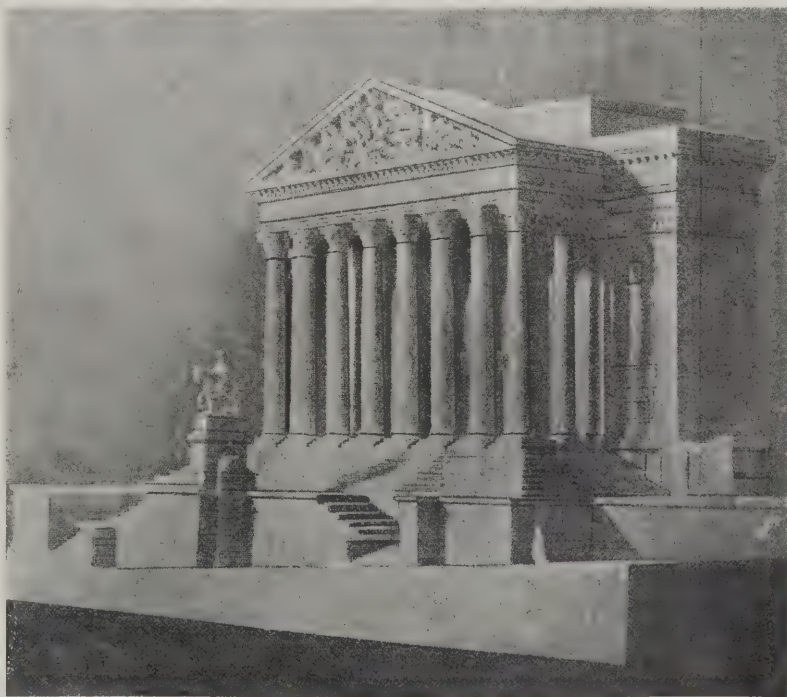
tee.—The following alterations take effect:—*Northern Centre*: Mr. A. J. Forsdike to succeed Councillor W. G. England. *South-Eastern Centre*: Mr. W. G. Crotch to succeed Councillor F. Grimble. *Council*.—*L.C. and N.W. Federation*: Mr. J. T. Duthie (Liverpool) succeeds Mr. W. Bullen; Mr. J. W. Kay (Rochdale) succeeds Mr. Bewley (Oldham). *London Federation*: Mr. C. F. Kearley and Mr. W. Hammond succeed Mr. B. J. Grover and Mr. A. W. Turnbull. *Midland Centre*: Mr. J. H. Walker (Derby) succeeds Lieut.-Col. J. Barnsley (Birmingham). *Eastern Counties*: The Cambridge President succeeds the representative from Great Yarmouth.

Mr. Smethurst, in inducting Mr. J. W. White to the chair, said that the Federation would have in him a most able and assiduous leader.

Mr. J. W. White, acknowledging, said that Mr. Smethurst had approached his work with a determination that had never been surpassed.

The New President's Address.

Mr. J. W. White's presidential address included the following observations: Let me first thank you for the great honour you do me in making me your President. It is an honour, I feel, not only to myself, but especially to that part of the country which I represent, and I might say that I am the first from the Northern Counties Federation to occupy this proud position. I appreciate to the full the responsibility of the position, and it shall be my endeavour to fill it to your satisfaction, and my hope is that when my term of office expires you will find that, emulating those who have preceded me, I have done nothing to betray the trust you are placing in me. On the necessity and benefits of federation I need not attempt to convince you. That is a matter on which we are all convinced. What I think we are most anxious about is, how to instil that idea into many more of the other builders of the country. We should then be, as a body, much more effective in our negotiations, and in obtaining rectification of the injustices from which many members of our industry suffer. If the general body of builders



'MODEL OF AMENDED SCHEME FOR THE LIVERPOOL KING EDWARD MEMORIAL BY R NORMAN SHAW, R.A.

realised fully the advantages of federation our present membership should be doubled. It is only by combination on our part that it is possible to deal with the workmen's organisations, and it is only by the federation of the local organisations that you can cope with the trade unions. By federation you are able to prevent them concentrating their attack upon any particular town or district, and thereby beating us all in sections. It is only by federation you are able to present a massed front, similar to their own. In fact, it is obviously the only way in which you can efficiently face the organisation of the other side. To-day throughout the country we have the Conciliation Boards, with the wonderful result that for the past four years there has practically been no strike in the building trade. This could not have been done without a Federation. We have the National Form of Contract with the Royal Institute of British Architects; the use of which is becoming more general every day. There is the possibility of a contract agreement with the Institute of County and Municipal Engineers, and the certain promise of a recommendation to their members of an arbitration clause in the contracts with municipal authorities. In the legislation which is playing so great a part in industrial affairs, the authorities now look to this Federation for advice on matters concerning the building trade. And all that this Federation has done and is doing in these matters has benefited not only its members, but the whole of the building employers in the kingdom. We have therefore great claims on the membership; which, if it were still more completely representative would be still more powerfully effective, and the more able to better the conditions under which many builders work. We want the added membership with the object of helping builders to help themselves, and with the further object of promoting the general benefit and uplifting of our trade. I mentioned before the matter of the Conciliation Boards. The advantage that this system has been to the employers and the workmen is indisputable; but we must remember that it has been in operation during a period of great depression in the building trade. We have got to see how it will operate during a period of good trade—that prosperous cycle which has been so long delayed, and which some think we are now about to enter upon. Let us hope that the promise of good trade is at length about to be fulfilled, and that when the good time comes the Conciliation Board will be able to settle all differences that may arise, so that employers and employees will be able to reap the full benefit of the prosperity. After referring at some length to the necessity to the Federation of the publicity and advocacy which only an effective official organ can afford, the President dealt with the finances of the Federation, and expressed the opinion that this subject, together with the means of increasing the membership and the influence of the Federation, should engage the early attention of the Administrative Committee.

Mr. Smethurst, replying, said the able and efficient conduct of the Federation was due in no small measure to the energy, initiative, and all-round ability of their secretary, than whom there was none better.

It was decided to forward to the Newcastle Federation a letter of acceptance and thanks for the invitation to hold the next half-yearly meeting of the National Federation in that city.

THE "CHEAP" CHURCH.

Under this heading Mr. W. D. Caröe, F.S.A., F.R.I.B.A., has a valuable article in the January issue of the "Church Builder," in which he renders the profession excellent service by the trenchant exposure of some very prevalent fallacies.

It cannot be disputed (Mr. Caröe writes) that the "cheap" church is entirely of modern origin. Our church-building ancestors, who may be said to have invented and developed for us the type of building which so materially influences our designs and methods, never indulged in unsubstantial work erected chiefly because of its cheapness. They worked under a continuous tradition which had its best development in church buildings, and made them beautiful, substantial, and solid. This statement is quite consistent with the fact that these great builders many times began a work which they had not the means to complete on the scale of magnificence contemplated at the outset. In such cases a simplification of detail took place; a vault perhaps was omitted and a wooden roof erected in its place. But still, the work finally accomplished was never "cheap." Again, there were instances where the building materials more usually desired were too costly to come by owing to difficulties or distances of transit, and they had in such cases to put up with such inferior materials as they could collect on the spot. A large part of their art consisted in the suitable use of such local material. We find notable examples where piers, arches, and every part possible are erected in the roughest rubble masonry plastered over. Dressed stone is used in the smallest possible quantity only where, as in window traceries, it could not be dispensed with. But in such cases the pillars, being comparatively weak in construction, were made stout and sturdy and extra thickness was given to the walls. Here again we cannot accuse them of cheap building.

Cheapness seems to have begun when traditional architecture died out. Some of the churches erected towards the latter end of the eighteenth century were essentially cheap, and cheapness was rife in the early part of the nineteenth. In latter days it has been held in check only by such societies as the Incorporated Church Building Society, and to a lesser extent by the Ecclesiastical Commissioners.

Economy, the author contends, is not necessarily cheapness; this is the distinction to be made clear, for the two are in fact wholly opposed. Experience tells us that cheapness in building involves with unerring certainty dearthness of upkeep. Cheap building is invariably bad building, and for the results of bad building there is no remedy save demolition and starting afresh, when at length funds and patience alike have been exhausted in the fruitless effort to heal running sores.

Now there are, nevertheless, those who promote the building of cheap churches, and influence ignorant committees unable to distinguish between cheapness and economy. As cheapness and vulgarity seem to run in harness, it is not surprising to find the art of self-advertisement, for which the press of to-day affords such ready facility, frequently resorted to in this association. Such advertisement generally takes the form of a promise of a church at so much a sitting (a wholly fallacious standard). In the outcome the promise is frequently unfulfilled, but if

fulfilled, it is only by sacrificing essentials. But whether fulfilled or not, there is the same special puff in the ear of the local reporter, when one of these structures receives episcopal benediction.

A study of churches of this type is worth making. It will be found that each and all of them come in each individual case from a brain which has not two ideas. Precisely the same set of plans and details and the same specification are used again and again, no matter what or where the site or the locality. At the very outset this bespeaks economy of production in favour of the producer, but the lack of it to the payer, because the cost of materials and their lasting qualities vary with the locality. The specification is, moreover, apt to be of the meagrest and most inadequate type, with large provisional sums reserved, so that, in the event of a breakdown in price in any locality, some alternative material like cheap terra-cotta may be substituted, no matter how unsuitable.

As far as granting and approving authorities are concerned, the design manages to run the gauntlet of approval with the narrowest possible margin, but having done so is loudly belauded as having secured what is represented as cordial recognition. As a fact the same stereotyped design is submitted again and again and the same faults are pointed out by granting authorities *ad nauseam* and with difficulty secure correction, though apt enough to appear again in the erected building. It is one of the curious facts connected with the revision of design that the worse the design the more stiff-necked is its author in consenting to amend it.

Again, the class of design we are considering is generally of that garish and showy type abounding in fussy architectural features, thoroughly poor in themselves, but devised to catch the eye of the uneducated in these matters, who predominate on many building committees. It tries, with small success it is true, to found itself upon the past, and is apt to provide capitals and bases and tracery and mouldings, all those features which remove the architecture of the past out of the sphere of cheapness. In trying to give these things cheaply they are given badly, while at the same time matters of more importance are sacrificed.

All the time the money thus squandered might have been spent upon genuine, creditable and economical architecture, the qualities of which may be briefly set forth as follows:—

(1) The use of suitable and, if available, local materials in a simple and direct manner, as best suits their nature. This requires much more art than is usually displayed in the class of buildings we are considering. Appropriate style; in fact, really depends upon it.

(2) The disposition of the materials so as to secure the greatest possible solidity and stability in relation to the amount of material used.

(3) The special adaptation of each design to the site upon which it has to be placed, and also to the needs of the climate and surroundings.

(4) The securing of architectural effect and interest by simple lines and good proportions rather than by elaboration of detail.

Reticence in design and harmony of parts go far to produce the element of solemnity and inspire that sense of reverence which ought to be present in every building devoted to the service of God.



BUSINESS OFFICES, BULAWAYO, RHODESIA FRANK SCOTT, M.S.A., ARCHITECT.

Given good planning and proportion all the above qualities are to-day compatible with sound and economical building. On the other hand it is not too severe to describe as a curse to the community some of the "cheap" churches which are now being foisted upon the unwary. Those who have by trial found them to be what they really are would be doing a good service to the Church in general and the Bishops in particular by freely relating their unfortunate experiences. The sooner work of this class ceases to be encouraged the less money—harder than ever to come by in these days for Church purposes—is likely to be wasted upon that class of "cheapness" which is the reverse of economy, and the negation of good taste.

BUSINESS OFFICES, BULAWAYO, RHODESIA.

The building shown in the accompanying illustrations has recently been erected as offices for Messrs. Johnson and Fletcher, engineers and machinery agents, and at the rear are machinery and other stores, with yard, etc.

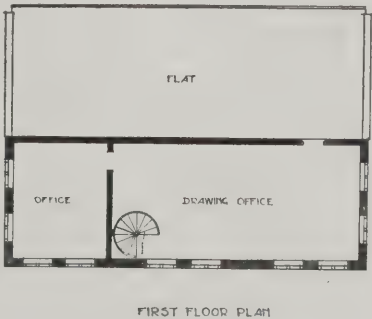
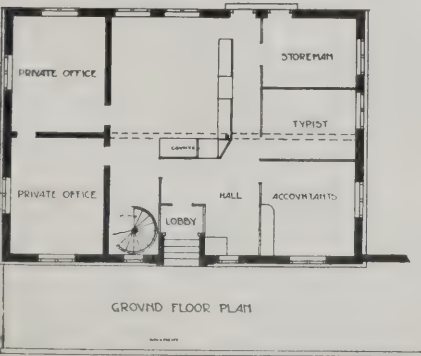
The base of the building up to window sills is of rock-faced grey granite, in random sizes, above which level the walls are of brick plastered and whitewashed. The steps to entrance door are also of grey granite, and the roof is covered with Marseilles tiles.

The external design is founded upon a study of Dutch Colonial work, which seems

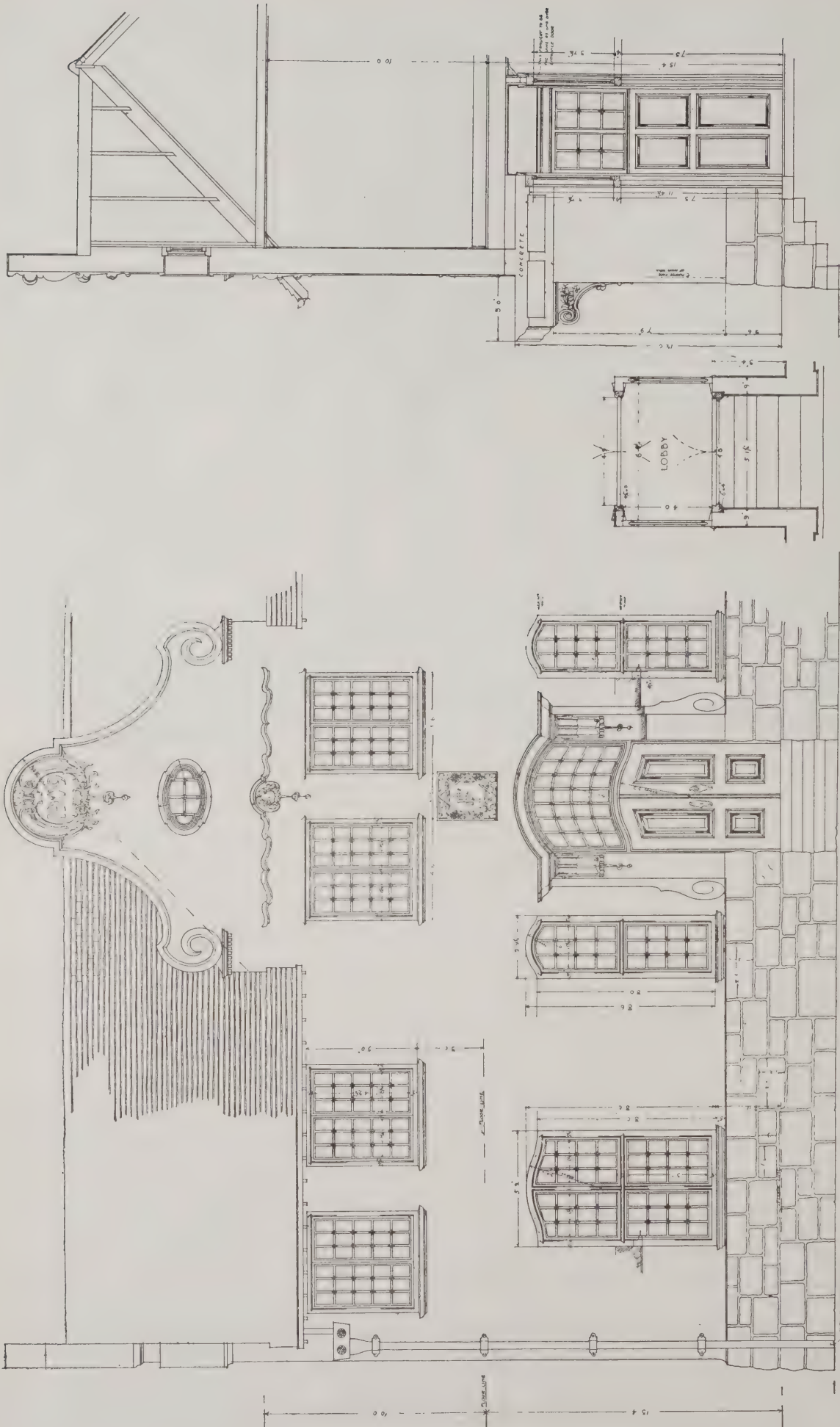
most suitable, not only to surroundings, but also to local materials. Expense generally forbids the use of granite throughout; and local bricks are hardly good enough to leave exposed. A plaster treatment is therefore in most cases forced upon the architect, and in the traditional type of building is found such a treatment, which, seen in South Africa with the strong bright sunlight upon it, seems perfectly to harmonise with its surroundings, and to have a charm which no mere copies of English or European styles ever have, the latter always seeming to be foreign importations and to be out of character with the scenery and people. The above remarks are meant to apply to the old Dutch Colonial examples, the writer not presuming that they have full force when considering the modern example shown in the accompanying illustrations.

The windows are casements in solid frames, and are treated with "Solignum," the same thing being applied to the internal woodwork generally. The front door, with its lobby and inner swing doors, are of teak oiled, and the counter and interior fittings have been uniformly constructed of stained poplar, and made to the architect's details. The internal walls are lime plastered and finished cream colour, while the ceilings are of steel stamped with an "all-over" pattern, and painted white with a flatted surface. The cornices are also painted in wood. The whole of the hardware was supplied by Messrs. Hope, of Birmingham. The architect is Mr. Frank Scott, M.S.A., Bulawayo, Rhodesia.

C



PLANS OF OFFICES AT BULAWAYO.



SECTION THRO'
CENTRE GABLE

PLAN OF ENTRANCE PORCH

FRONT ELEVATION

HALF INCH SCALE

FRANK SCOTT
ARCHITECT
BOX 256 BULAWAYO

BUSINESS OFFICES, BULAWAYO, RHODESIA, FRANK SCOTT, M.S.A., ARCHITECT.

CONCRETE AND STEEL SECTION

(MONTHLY.)

Concreting in Cold Weather. Although, in this country, hard winters have, during recent years, become remarkably rare, it can hardly be supposed that they have disappeared for ever. We may get, yet again, and perhaps immediately, long periods of severe frost, during which, for lack of knowledge of what can be and is being done in other countries to meet such conditions, building operations are apt to come to a complete standstill. The following account of the measures that may be taken to avert such delays may possibly, therefore, admit of an early application, or at the least will be useful for reference.

As the example of the proper handling of winter work the experience of a contractor during the construction of a reinforced concrete bridge is recounted. The bridge consisted of three 3-centred arches having a clear span of 110 feet each. While the arches proper were being concreted, the weather turned quite cold, from 12 to 15 ins. of ice forming on the river. Nineteen days after the centre span was concreted, a warm rain set in, resulting in a flood which carried away the false work and centering for this span, but did not result in any damage to the bridge. The materials for the concrete were thoroughly heated, being delivered to the mixer at an average temperature somewhat above blood-heat, and as soon as the concrete was deposited it was protected with a covering of tar paper and boards. The proper handling of the work in this case probably prevented the total destruction of the middle span when the forms were accidentally removed long before the intended time.

The Precautions Necessary. The proper precautions necessary to insure satisfactory results with concrete during freezing weather depend very much upon the class of construction, large plain mass work such as retaining walls and abutments not requiring the same care and protection as thin walls, columns, beams, and floor slabs. Elaborate and expensive plants for heating the materials and protecting the work have been constructed and successfully used on important work, but the additional equipment considered necessary for winter work is really comparatively limited, consisting simply of a sufficient amount of canvas for housing in or covering the work, salamanders or some other form of heaters for maintaining a temperature above the freezing point, and some provision for heating materials.

Heating Apparatus. Half-cylinders of sheet steel set directly upon the ground in the form of an arch make a simple form of sand-heater, as also do lengths of metal culvert pipe closed at one end and provided with a short piece of smaller pipe for a flue. Sand and stone may be heated by piling directly upon pipe coils

supplied with steam or by covering with tarpaulins and applying the steam directly to the material to be heated. Where the materials are delivered in cars, excellent results can be obtained by this latter method. For heating water, the common practice of relying upon a steam pipe placed in an ordinary barrel is not to be recommended. The water is generally used too fast to permit of its being properly heated by this method. A suitable tank should be provided, the water being heated by means of a coil supplied with steam from the boiler supplying the mixer engine, or from one erected for this purpose. The size of the tank will, of course, depend upon the amount of water needed, and the time that is required for heating it.

Alternative Methods.

Work can be successfully carried on during freezing weather by either one or both of two methods: heating the concrete materials and then protecting the work until it has had a chance to harden, or, for temperatures but little below freezing, by lowering the freezing point of the concrete. This latter method is probably the simplest and cheapest, but not the best, and consists, in American practice, of adding to the concrete some substances that will reduce its freezing point. Only those substances that have no effect on the strength and durability of the concrete can be used. Ordinarily salt is most commonly used for this purpose; and experiments indicate that while the addition of a limited amount of salt retards the hardening somewhat and lowers the initial strength, the ultimate strength of the concrete is not affected by its use. Even when salt is used, it is important that the aggregate be free from frost, as it is impossible to mix properly such materials. Approximately one per cent. by weight of salt to the weight of water is required for each degree F. below freezing, but more than ten per cent. of salt should not be considered safe, and this amount is not effective for temperatures lower than 22 degrees F. Calcium chloride has been used in place of salt for the same purpose, and apparently gives very good results. In one case where commercial muriatic acid was used to prevent freezing, a small amount of acid being added to the mixing water, the results obtained were not entirely satisfactory, and the present unsatisfactory condition of the concrete, both as to colour and strength, is undoubtedly due to the use of the acid. At any rate, the use of acid in this connection is not to be encouraged. To insure satisfactory results during cold weather, the material should be heated and the work protected until it has attained sufficient strength to withstand the action of frost, either the water, sand and water, or sand, stone, and water should be heated. Heating the materials accelerates the rate of hardening, lengthens the time before the concrete becomes cold enough to freeze, and, in temperatures but little below freezing, will insure the hardening of the concrete before it can be damaged by freezing.

Treatment of Heavy Work. For heavy mass work, thick walls, abutments, etc., it is not necessary to heat the sand if it is dry and free from lumps of frozen matter. The water, however, should be heated, and if the concrete goes into place unchilled it will harden quite rapidly, as mass work retains its initial heat for a long time and additional heat is generated during the process of hardening. If the forms are tight and made of heavy material it will be necessary to protect the top or exposed surface of the work. This may be accomplished by covering with tarpaulin and applying a jet of steam, or by covering with boards, building paper, or some other suitable material, and applying a thick blanket of straw or manure. A thickness of from 10 to 12 inches of manure laid on paper or canvas will, if kept dry, protect work from freezing for days at a temperature as low as 10 degrees F. Manure should not be placed directly upon the concrete, however, as it is very apt to discolour the work, and in some cases is thought to have caused a slight disintegration of the surface coming in contact with it. As an additional precaution for keeping the work from freezing through the forms, a covering of building paper furred an inch or two from the forms has been found to be effective. Actual tests in practice have shown a difference in temperature of 15 degrees between the outside air and the space between the paper and the forms.

Inspection of Winter Work. Careful inspection of winter work is necessary before removing the forms, and it must be remembered in this connection that frozen concrete, which, upon thawing, has but little strength, closely resembles thoroughly hardened concrete in appearance, and when broken frequently shows a fracture through the aggregate. To prohibit placing of concrete when the temperature is near or below freezing, as is frequently done in specifications, causes unnecessary delays and imposes an unjust hardship upon the contractor. If concrete work is properly handled it may be successfully carried on irrespective of weather conditions. The cold weather clause in specifications, instead of prohibiting, should be so written as to permit of construction during freezing weather, provided proper precautions, which should be specified, are taken.

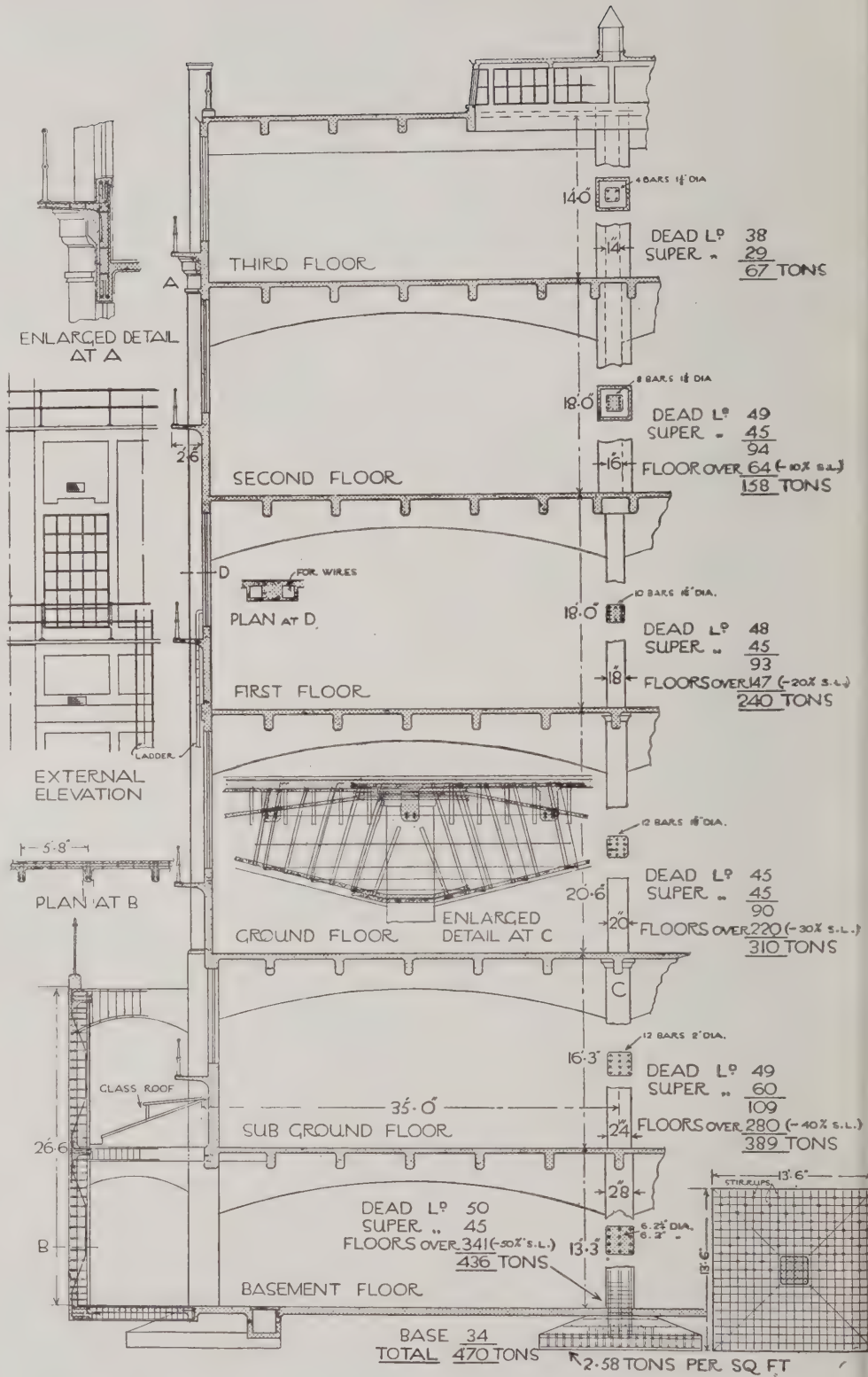
What is a Beam?

A correspondent signing himself "Licentiate" forwards the following interesting communication:—"When is a beam not a beam? This thought comes to me after the discussion upon Sir Henry Tanner's exceedingly instructive lecture on the new General Post Office. For at least three distinct views of the 'arched beam' there used were taken by as many gentlemen during the discussion. (1) The president assumed it to be a beam with the strength missing

where it was most required; (2) Professor Adams apparently took it to be an arch; whilst (3) Sir Henry Tanner afterwards said it had apparently been designed on cantilever principles. Whether one and all are correct it is not for me to say. It is always assumed that the concrete is strong enough in compression and only requires strengthening in tension by steel bars, etc. Yet if we apply this to (1) we find all the tension bars at the centre above the neutral axis, viz., in the compression area; or to (2) as an arch, all parts are in compression and therefore (theoretically at least) no reinforcement is necessary; or (3) as cantilevers the lowest portion is in compression—such stress being greatest at the abutments; yet this part of the beam is most reinforced. All this is so puzzling to a novice that one would like to have a fuller knowledge of the theory of these 'arched' beams."

The accompanying sectional diagram will be of assistance in reconsidering the points raised, as it shows the loads for each floor, as well as the details of construction. It may be useful, also, to recall a few of Sir Henry Tanner's references. "The retaining walls," he said, "vary from 7in. to 8in. thick, strengthened by beams and counterforts, and are, in fact, floors placed on end. They are maintained in the vertical position by the arched beams or struts which are continuations of the main floor beams. The reinforcement in the wall slabs consists of 7-16th in. diameter horizontal rods spaced at from 4in. to 10in. centres on the inside of the wall, and 5-16th in. diameter rods on the outside spaced at from 8in. to 24in. centres. There are also vertical rods of 5-16th in. diameter spaced at 8in. centres, and stirrups are used. The vertical counterforts, 14in. by 7in., arranged about 5ft. 6in. apart, are supported by horizontal beams, and are designed in a similar manner to the ordinary floor beams. The former have two bent and two straight bars of 1in. diameter, and the horizontal beams are similarly reinforced, but with bars of varying diameters. . . The arched main beams are 2ft. 6in. in depth at the centres, and 5ft. 3in. at the haunches, the thickness being 10in. The depths include the floor slab. The reinforcement for these beams when of 35ft. span consists of two 1½in. diameter bars at the top and four 1½in. or 2in. bars at the bottom. Two of these follow the curve, and when they reach the haunches pass horizontally through the column, and then follow the curve of the adjoining beam, passing 2ft. into it; the other two bars are horizontal for a third of the span, then bend up at a slope till within 3in. of the top, and are carried through the column and 2ft. into the next beam as before. . . For larger spans and the heavier super loads the reinforcement is varied accordingly, and the beams in the ground floor are 3in. deeper in the centre, and 2in. thicker, the maximum being the centre 45ft. spans. The secondary or floor beams are 8in. wide and 10½in. deep, including the floor slab, and are spaced at about 5ft. 10in. centres."

It will be seen that the dead and super load of one bay as sustained by such beams is 90 tons, and that the beams were reinforced with 4-2 inch bars, being 2ft. 6in. deep at centre. Suppose we take the leverage arm to be 26 inches, we get a moment of re-



NEW GENERAL POST OFFICE, LONDON: SECTION OF A COMPLETE BAY.
NORTH TO SOUTH.

distance of $26 \times 3.1410 \times 4 \times 7\frac{1}{2} = 2,450$ in.-tons. We see from this that the bending moment has been taken as about $\frac{Wl}{15.5}$ which is open to justification. Therefore, the construction is sufficiently deep to act as a beam at the centre. Our view is that the construction is of continuous beams, and that near the supports where the forces of compression and tension are reversed, the depth is increased to provide for the reduction in area of concrete in compression, the beam at this point being practically rectangular, whereas at the centre

of the span it was tee-headed. In continuous beams cantilever and suspended beam action is simulated, and often the beam is spoken of loosely as a cantilever and beam, but there is a distinction. Sir Henry Tanner's statement was in a way correct, but, of course, to appreciate it we must understand the design of continuous beams. By courtesy of the Royal Institute of British Architects, we are able to give the above illustration, from the issue of the "Journal" containing the report of the paper.

STRESS IN ANGLE CLEAT RIVETS.

By EWART S. ANDREWS, B.Sc.Eng., Lond.

In the case of the rivets in an angle cleat as commonly used for connecting together I beams in constructional steel-work, we have an interesting example of an eccentrically loaded riveted joint. The designer does not, of course, calculate the strength of these rivets in the ordinary case, because such connections are to a large extent standardised for a certain minimum length of beam; but in special cases calculations have to be made; and, as the eccentricity of the load causes considerably heavier stresses on the rivets than if the reaction be merely divided between them, it is usual to allow for the eccentricity in the following manner.

We will first consider the general case, and then apply our method to a particular numerical example.

General Case.

Let 1, 2, 3, 4, 5 . . . Fig. 1, represent a number of rivets connecting a plate A to a plate B, and let P be the load transmitted from one plate to the other.

Then if X is the centre of gravity of the rivets, and P is at a distance x from X, it is clear that we may place at X forces equal to, and opposite to, P, as in the case of an eccentrically loaded column, thus obtaining a couple of moment M=Px, and a central load P.

The central load P may be divided equally between the rivets, thus giving a force F on each.

The moment Px may be divided up between the rivets as follows:—

Let the load on a rivet due to the moment be proportional to the area a of each rivet, and to its distance r from the centre of gravity X.

Say load on each rivet=k.a.r. where k is a constant,

Then moment of load on each rivet

=load x r

=kar² (1)

Total moment of loads on rivets= moment P x

=Σ(kar²)=k (a₁r₁²+ a₂r₂²+ . . . A_n r_n²)

In nearly every case the area of rivets a will be constant ∴ putting ka=s we have

Total moment =Px=sΣr² (2)

where s=load at unit distance from X.

∴ s= $\frac{Px}{\Sigma r^2}$ (3)

Then load due to eccentricity on any particular rivet=W=s.r

This will be called the moment-load.

Then the resultant load R on any rivet will be the resultant of the loads F and W, and can be found simply by the usual graphical method. Fig 1 shows the construction applied to the rivet 3. The resultant of the various loads R should then come equal and opposite to P. This resultant can be found nicely by the link and vector polygon construction, and provides an interesting check of the accuracy of the calculations.

Numerical Example.

We will now take the case shown in Fig. 2 of the cleat given in the Handbook of Messrs. Dorman, Long and Co., Ltd., for a 16in. by 6in. standard I beam with a minimum span of 18ft., the rivets being of 3/4 in. diameter. The safe uniformly distributed load given for this span and beam is 25 tons, so that the reaction at each end will be $\frac{25}{2}$ = 12.5 tons, and half of this will be carried by each angle, or the load P will be 6.25 tons.

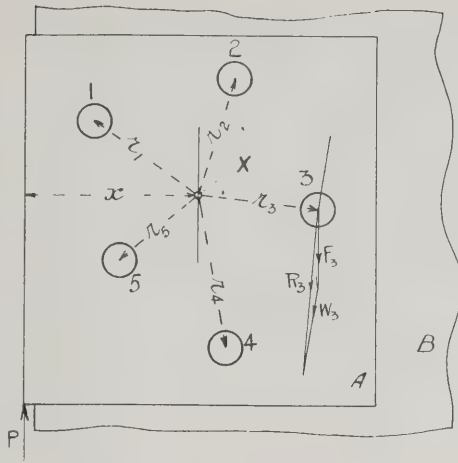


Fig 1.

First find the position of the centre of gravity of the rivets. It is clearly on the horizontal line through the rivet 3, and its distance from the line 1, 3, 5 is obtained by moments thus:

$$5d = 2 \times 2\frac{1}{4}$$
$$\text{i.e., } d = \frac{4.5}{5} = .9 \text{ in.}$$

Then we tabulate the dimensions as follows:—

No. of Rivet.	r.	r ²
1	4.58	21.06
2	2.62	6.88
3	.90	.81
4	2.62	6.88
5	4.58	21.06
		Σr ² = 56.69

$$\therefore s = \frac{Px}{\Sigma r^2} = \frac{6.25 \times 3.15}{56.69}$$
$$= .348 \text{ tons.}$$

The moment load will clearly be a maximum on rivets 1 and 5, and will be equal to

$$W_5 = .348 \times 4.58 = 1.59 \text{ Tons.}$$

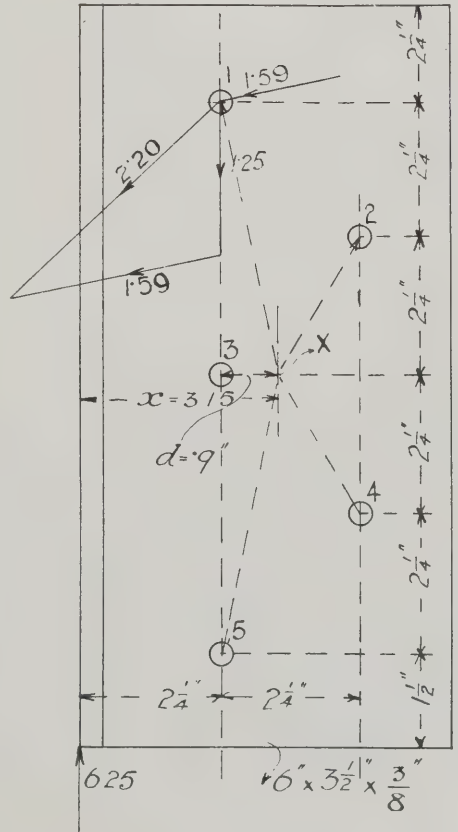


Fig 2.

The direct load F on this rivet = $\frac{6.25}{5}$
= 1.25 tons.
Therefore resultant load = R₃ = 2.20 tons
[From Fig. 2.]
Now bearing area of a 3/4 in. rivet in a 3/8 in. plate = $\frac{3}{4} \times \frac{3}{8} = \frac{9}{32}$ sq. in.
Bearing stress on rivet = $\frac{2.20 \times 32}{9}$
= 7.82 tons per sq. in.
Area of a 3/4 in. rivet in section
= $\frac{\pi}{4} \times (\frac{3}{4})^2 = .442$
∴ Shear stress on rivet = $\frac{2.20}{.442} = 4.98$ tons per sq. in.

The above calculation shows that the rivets are stressed just about up to what is commonly taken as a safe working stress for rivets in shear, viz., 5 tons per sq. in. The importance of allowing for the eccentricity of the stress will be clear from this example, because the resultant maximum stress on the rivets comes nearly twice the value which would have been found if the eccentricity had not been taken into account.

CANAL BRIDGE AT BLACKBURN.

A successful test has been carried out on a new reinforced concrete bridge over the Leeds and Liverpool canal at Moor-gate St., Blackburn. The new structure was erected to succeed an existing arch. Both the width of the roadway and the span of the bridge were greatly increased in order to afford additional facilities to the traffic of both the road and the canal. The span is now 40ft., and the width of the roadway 37ft. between parapets.

Owing to the situation of the bridge, exceptionally heavy loads had to be provided for, and the test consisted of a moving load of not less than 65 tons. The test was made with a 14-ton traction engine drawing an 18-ton four-wheel bogey (No. 1), and a 15-ton engine drawing a 32 ton wheel bogey (No. 2).

The test was first made by passing No. 1 engine and bogey over the bridge, the load being 32 tons. Bogey No. 1 was then left on the bridge, and engine and bogey No. 2 were passed over alongside it, the total load being, as already stated, 65 tons. In neither case was there the slightest measurable deflection, and the vibration during the passage of these exceptionally heavy loads was practically imperceptible.

This bridge was designed by the Patent Indented Steel Bar Co., Ltd., and was constructed under their supervision by Messrs. F. Mitchell and Sons, contractors, Manchester; indented bars being used in the reinforcement throughout. The structure affords an interesting example of the advantages of reinforced concrete, as, in addition to the economy effected, the rise allowed was very slight, only 1ft. on a span of 40ft., owing to the necessity of avoiding interference with the road gradient. Obviously it would have been difficult if not impossible to construct a bridge in any other material which would have given such flat gradients in the roadway, and at the same time such headway above the canal.

The engineer for whom the work was constructed was Mr. W. Stubbs, A.M.Inst.C.E., Engineer to the Corporation of Blackburn, under whose personal supervision the test was carried out.

THE CONCRETE INSTITUTE
TRANSACTIONS.

Volume II. (Part 2) of "The Concrete Institute Transactions and Notes" opens with an account of the visit to Paris by a deputation invited by the Institute to examine certain reinforced concrete structures which had been in use for a number of years, and to find out whether or not the steel had been well preserved, and what precautions, if any, had been taken to ensure this preservation. The visits were arranged by M. Rabut, Chief Engineer of State Railways, and occupied two days—April 8 and 9, 1910. The first visit was to the church of St. Jean de Montmartre, Paris, in which the columns and arches are of reinforced red brick casings

enclosing a reinforced concrete core, while the roofing consists of three vaults, built partly of brick and partly of reinforced concrete; the floor and the arching of the belfry tower and the ornamental balustrades being built entirely of reinforced concrete. The reinforced concrete work seems to be covered with a rendering of very strong cement mortar. No sign of deterioration from rusting was perceptible. The architect, M. de Bandon, conducted the party over the church, the work in which had been carried out by M. Cottancin, who is the author of the system of reinforcement employed. The roofing of the Canal St. Martin was inspected with similar negative results as regards rusting. A three-storey house built fifty-eight years ago by François Coignet has a roof consisting of a slab of

reinforced concrete, which M. Edmond Coignet, who organised the visit, was so kind as to break open in order that the deputation might inspect the bars, which were found to be perfectly clean, with no sign of rust. The Paris sewage disposal works were next visited. They were constructed about 1893, and appear to be in excellent condition. The same observation applies to a cut-and-cover tunnel containing the rising mains from the pumping station at Colombes, where the construction works were erected fifteen to seventeen years ago.

M. Hennebique's house, 1, Rue Danton, Paris, and his country-house at Bourg-la-Reine were next successively visited. They were built respectively in 1899 and 1904, and are both excellently preserved. The country-house, as illustrated in the "Transactions," is a curiosity, not to say a freak, of design. Other works visited were a reservoir at Billancourt, erected in 1899, and the widening of the Paris-Auteuil Railway; and in each instance the work was found to be in wholly satisfactory condition. It is noted that in all these works the concrete used appeared to be of excellent quality, dense and fine, in many cases the aggregate consisting wholly of gritty sand, without any stone.

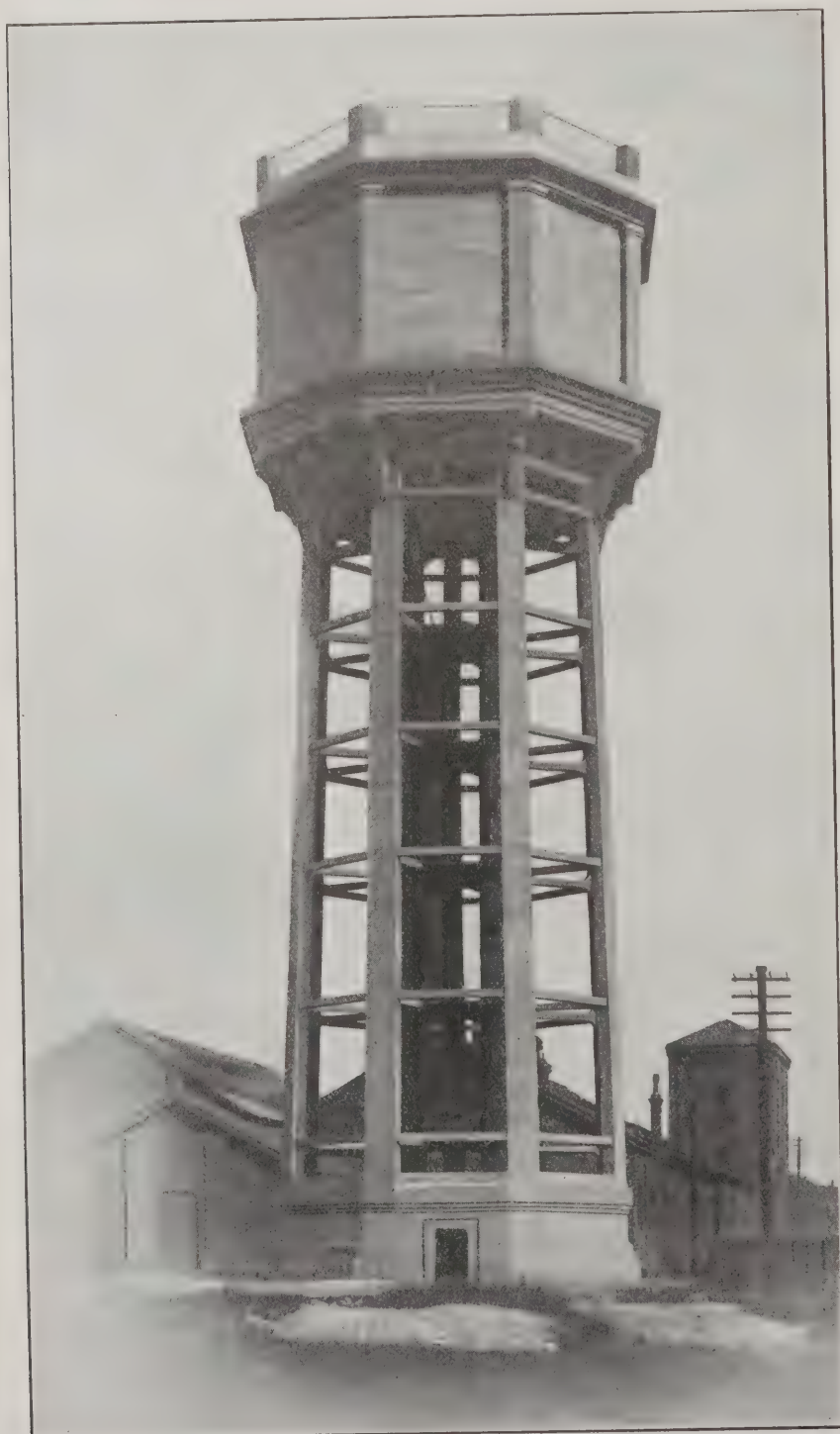
Other visits recorded were to the new Chingford Reservoir Works (of which the illustrations include a folding map), to the British Improved Construction Company's works at Fulham; and to Southampton Docks. The eighth to the eleventh meetings of the Institute are reported, and the papers included are: "Notes on the Le Chatelier Boiling Test of Portland Cement," by Mr. D. B. Butler; "The Effects of Sewage and Sewage Gases on Portland Cement Concrete," by Mr. Sidney H. Chambers; "Reinforced Concrete Bins," by Mr. H. Kempton Dyson; and "The British Aluminium Company's Works at Kinlochleven," by Mr. A. Alban H. Scott. In each instance the discussion (which is always remarkably keen at the Concrete Institute) is scarcely less valuable than the paper.

The Concrete Institute Transactions and Notes. Volume II. (Part 2). Published at the Offices of the Concrete Institute, 3, Waterloo Place, Pall Mall, S.W.

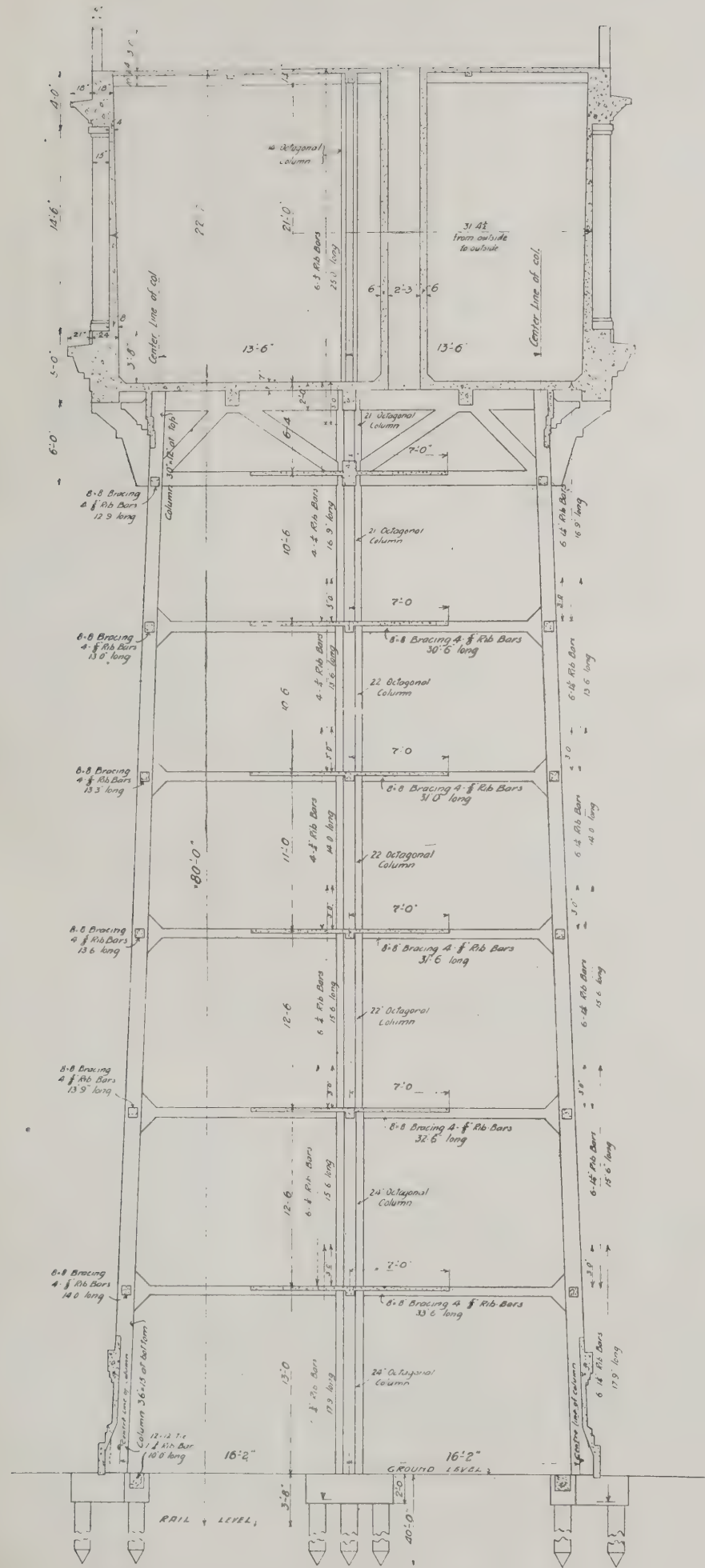
REINFORCED CONCRETE
WATER TOWERS AT YORK.

Two interesting examples of reinforced concrete elevated water towers have recently been completed for the North Eastern Railway Co. at York Railway Station, to the order of Mr. Bengough, Chief Engineer to the Railway Co. The holding capacity is, in one case, 100,000 gallons, and in the other 20,000 gallons. The 100,000 gallon tower, which stands some 101ft. high, is octagonal on plan, with an internal diameter of 32ft. 4in., and a depth of 21ft., the total weight of water contained in the tank being some 450 tons. The tower is supported on eight external columns, and one internal column, reinforced with Kahn rib bars of $\frac{3}{4}$ in. and $\frac{1}{2}$ in. sections, and is braced at intervals varying from 14ft. to 12ft. 9in. Platforms are erected at the level of the bracing to permit of the necessary ladders giving access to the tower. Boring operations having proved the ground to be unsatisfactory, three 40ft. Truscon piles were driven under each column.

The photograph shows a quality that previous experience of similar structures had hardly led one to expect—namely, a definite approach towards beauty of archi-



REINFORCED CONCRETE WATER TOWER AT YORK, FOR THE
NORTH-EASTERN RAILWAY COMPANY.



100,000-GALLON WATER TOWER, YORK: SECTION.

tectural treatment. This quality is the more admirable from its organic spontaneousness. It arises from an economic and adroit adaptation of the materials to the circumstances, and is altogether very suggestive of the architectural possibilities of reinforced concrete, even where the subject seems at first sight to be unpropitious.

The 20,000-gallon tower is hexagonal on plan, with an internal diameter of 20ft., and a depth of 10ft., and is covered with a light flat concrete roof, the weight of the water contained in the tank when full being 90 tons. This tower rests upon a foundation of two Truscon piles 40ft. long under each of the columns. There are six columns in all, 16ft. by 16ft. at the bottom, and 16ft. by 12ft. at the top, based at intervals of 14ft. The bracings are 8ft. by 8ft. reinforced with $\frac{3}{8}$ in. bars. The bracing platforms are arranged for the inclusion of a ladder giving entrance into the tank through a circular manhole. The tanks were tested by filling up with water. This operation commenced, in the case of the 100,000 gallon tank, on June 17th, and the 20,000 gallon tank on August 23rd, and was finished on the 21st June and 28th August respectively. In the result, the tanks were both found to be watertight, without the use of any special waterproofing, and were satisfactory in other respects.

The Trussed Concrete Steel Co., Ltd., were the consulting engineers, and the whole of the reinforcement was on the Kahn system. The work was under the control of Mr. Malt, acting for the engineer of the railway.

A STANDARD SPECIFICATION.

Messrs. J. H. Tozer and Son, Ltd., of York Mansions, York Street, Westminster, send us a copy of their "Standard Specification" for the execution of reinforced concrete work on the "Lock Woven Mesh System." The following are some abstracts from it:—

MATERIALS.

The cement must be of the best quality British artificial Portland cement of an approved make and guaranteed to conform with the specification of the British Standards Committee of slow-setting cement.

The sand to be clean, sharp, and coarse river or approved pit sand of various sized grains up to particles which will pass $\frac{1}{4}$ in. square mesh, but which at least 75 per cent. shall pass $\frac{3}{8}$ in. square mesh. It must be free from all ligneous, organic or loamy matter.

The aggregate must be of Thames ballast screened from sand and washed or broken brick or some other hard clean material, free from all sulphur and other impurities. The choice of aggregate to rest with the engineers, and to be determined by them on account of different aggregates being more suitable to one class of construction than another. No aggregate shall be larger than that which will pass a $\frac{3}{4}$ in. ring unless otherwise sanctioned by the engineers.

The proportioning of the concrete to be determined by the engineers, and carried on in a manner approved by them.

WATER.

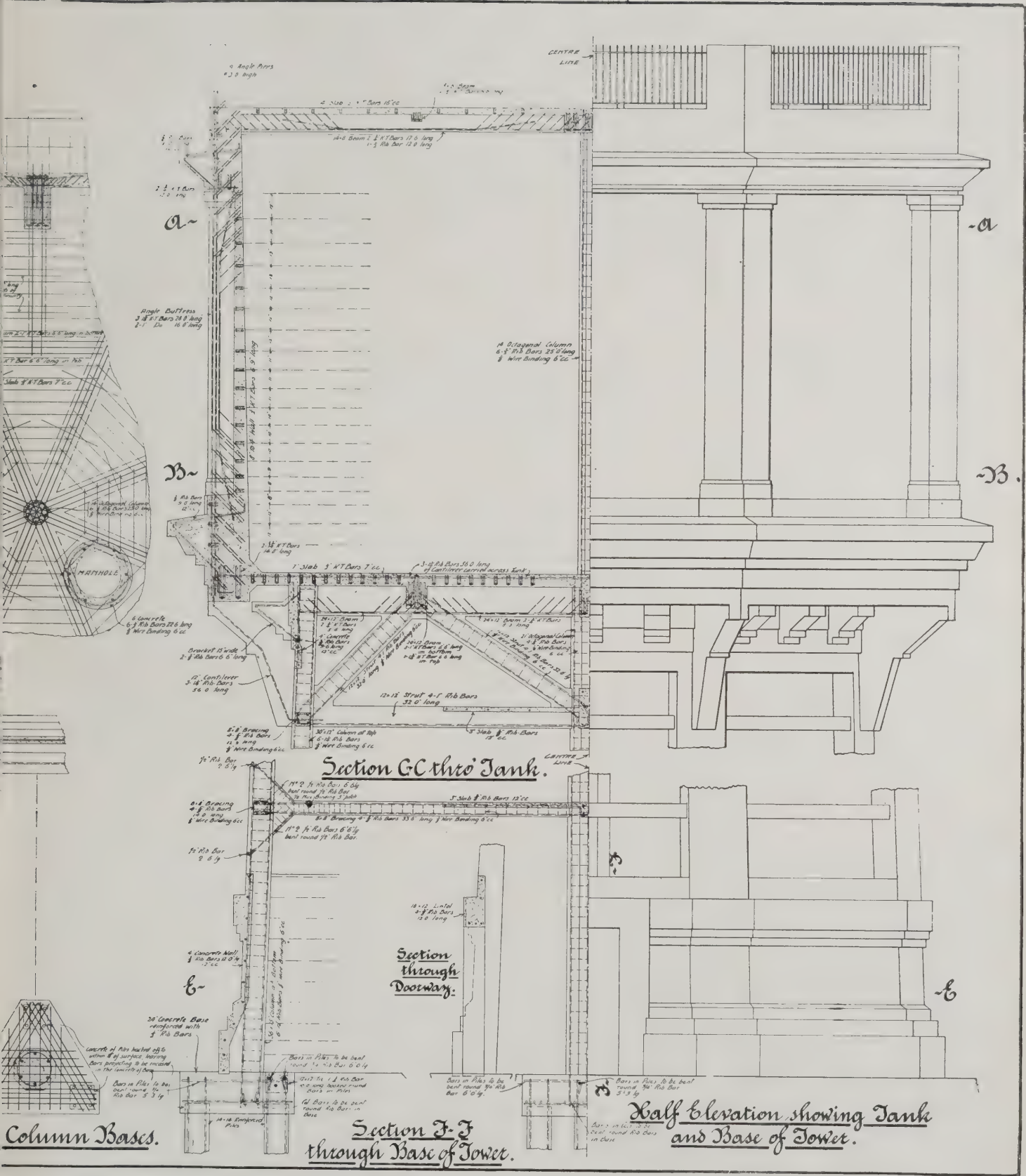
The water to be clean and clear, either from the mains or from springs. No stagnant, salt, or impure water must be used. About 25 per cent. of water should be added to the mixture, but this quantity must not be made a hard and fast rule, as various aggregates absorb different amounts of water, and the dryness of the atmosphere and the centering affect the matter. The aggregate should always be wetted before the cement is added.

MIXING.

When the magnitude of the contract permits, all mixing should be carried out by a suitable mixing machine. A continuous mixer that automatically proportions the materials is preferable.

The concrete when mixed should be a semi-liquid mass that will quiver under the blow of the rammer. When consent is given to mix by hand it shall be done as follows:—A clean level platform to be provided which shall be swept clean and watered after each batch is removed. The necessary quantity of the three materials shall be measured in separate boxes; the cement shall be measured 5 per cent in excess of the specified proportion. The materials shall be mixed at least twice in a dry state, then the necessary amount of water added





A CONCRETE SOUNDING BOARD.

A bandstand with a sound-reflecting roof built entirely of reinforced concrete is in use in Wiesbaden, Germany. The ground plan of the structure is 46.0ft. wide and 37.8 ft. deep, the sides being tangents for about 18.4 ft. from the front, joined by a circular curve with a radius of about 20 ft. The arched and domed roof rests on vertical walls about 10½ ft. high above the platform. Vertical sections parallel with the front of the pavilion being taken, the radius of the roof will be found to increase gradually from back to front until at the front the semi-circular arch span is 40ft. in the clear.

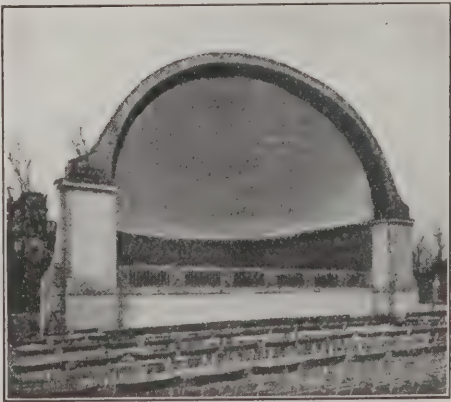
Since the front is open the structure could not be designed as a dome, but was figured in arch strips parallel with the front. It was found that the dead load of the roof, the snow, and the most unfavourable wind load, gave a considerable horizontal thrust, which was designed to be taken by a horizontal beam system running around the pavilion, consisting of straight beams on the two sides and a curved beam at the closed end. The moments in these beams with various conditions of loading were investigated, and reinforcement provided accordingly. The reactions for this horizontal system were obtained by supporting the forward end of each straight beam as supported by its rigid connection with the circular beam.

The arched roof is 4ins. thick at the crown, 6ins. thick at the horizontal skewback beam, and is reinforced with circumferential rods near both extrados and intrados. The two layers are wired together at intervals, and are supplemented by longitudinal rods to act as distributors and take care of the temperature stresses. Forming a rim on the front of the roof is a stiffening arch which serves no other purpose than to take the thrust of the horizontal skewback beams.

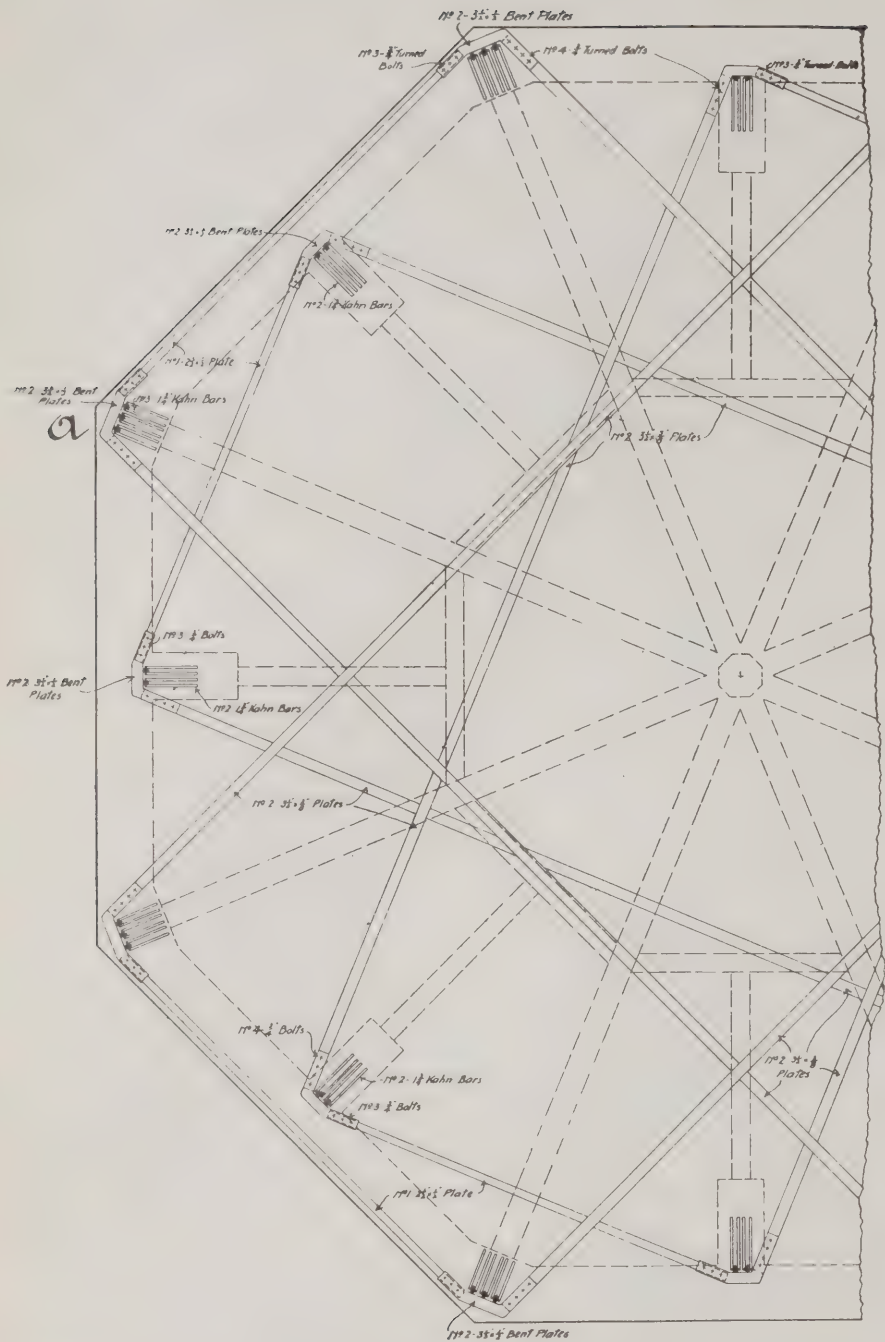
The straight and curved skewback beams are carried on concrete columns about 7ft. 3ins. on centres, between which are thin reinforced curtain walls.

It is stated that in the single test for the acoustic qualities to which the structure has been subjected the carrying power of the sound and the blending of the instruments was excellent.

The structure was built under the direction of the city's building commissioner, Herr Grun, and was detailed and constructed by Rheinische Betonbaugesellschaft, Ltd., of Mainz.



OUTDOOR BAND STAND WITH REINFORCED CONCRETE SOUNDING-BOARD, AT WIESBADEN, GERMANY.



100,000-GALLON WATER TOWER AT YORK PORTION OF PLAN SHOWING TIES IN TOP OF TANK.

and mixing continued until the whole is of a uniform colour and of the consistency stated above.

No hard and fast rule shall be employed of mixing twice wet and twice dry. A competent and trustworthy ganger must be in constant attendance on the mixing platform.

REINFORCEMENT.

All steel bars used for beams and posts should have a tensile strength of not less than 60,000 lbs. per square inch of section, and an elastic limit of not less than 50 per cent., nor more than 60 per cent., of the ultimate tensile strength, with an elongation of not less than 20 per cent. in a length of 8 ins. Any bar must stand bending cold round a bar of its own diameter, through an angle of 180°, and should close down upon itself without fracture on the outside of the bent portion. All welding will be prohibited unless where absolutely necessary, and must be done only with the sanction of the engineers.

All bars and Lock Woven Mesh shall be free from scale, flaws, or other imperfections, and from oil, but a slight coating of rust is not objectionable. Wherever cinder concrete is used, the bars before being placed in position should receive a coating of neat cement grouting.

PLACING OF CONCRETE.

All concrete shall be placed in its final position in the work as soon as possible after mixing. In no case must more than half an hour be allowed to elapse before this is done. The concrete must be placed gently into position in layers not exceeding 6 ins. thick, and must not be tipped or dropped from a height. It must be thoroughly rammed into

position, great care being taken to see that the steel reinforcement is thoroughly surrounded by the liquid cement, and that no voids or cavities are left. This can be ensured only by repeated ramming with a suitable tool.

In hot weather the concrete shall be continually moistened for at least a week after placing in position.

CESSATION AND COMMENCEMENT OF WORK.

Stoppage of work in laying concrete in slabs, beams, etc., will be allowed only at the third points of the span of the slab, or a beam, and the joint with the new concrete should be a vertical plane at right angles to the direction of the span of beam or slab. No joint must be made towards the ends of beams or slabs, or close to a concentrated load.

Wherever a stop has been made in concreting, before recommencing the work the surface of the existing concrete must be carefully washed with a stiff brush to remove loose particles and dust, and a 1 in. thick layer of neat cement and sand 1 to 1 must be poured over it before the concrete is rammed against it.

FROSTY WEATHER.

No concreting work should be done when the temperature is near or below freezing point. If a frost comes on shortly after any concreting work has been completed, this should be very carefully covered over with sawdust, straw, or sacking, and the centering must be allowed to remain up for at least as long a time after the complete disappearance of the frost as it would have been left in position if no frost had occurred.

A NEW TYPE OF GIRDERLESS FLOOR.

There is now nearing completion in Boston, U.S.A., a large wool storage warehouse for the Terminal Wharf and Railroad Warehouse Company, in which girderless reinforced concrete floors of a new type, and concrete columns containing steel cores, have been used. The building is 65ft. by 388ft. in plan, and eight storeys and basement high. There are no wall columns, and the brick walls carry the floor slabs directly.

The building is divided into four sections (each either 96 or 98ft. long) by 12in. brick fire walls, each storey of which is carried upon the floor slab directly below. Each section can be operated independently, as it is supplied with its own elevator and stairway enclosed in fireproof wells.

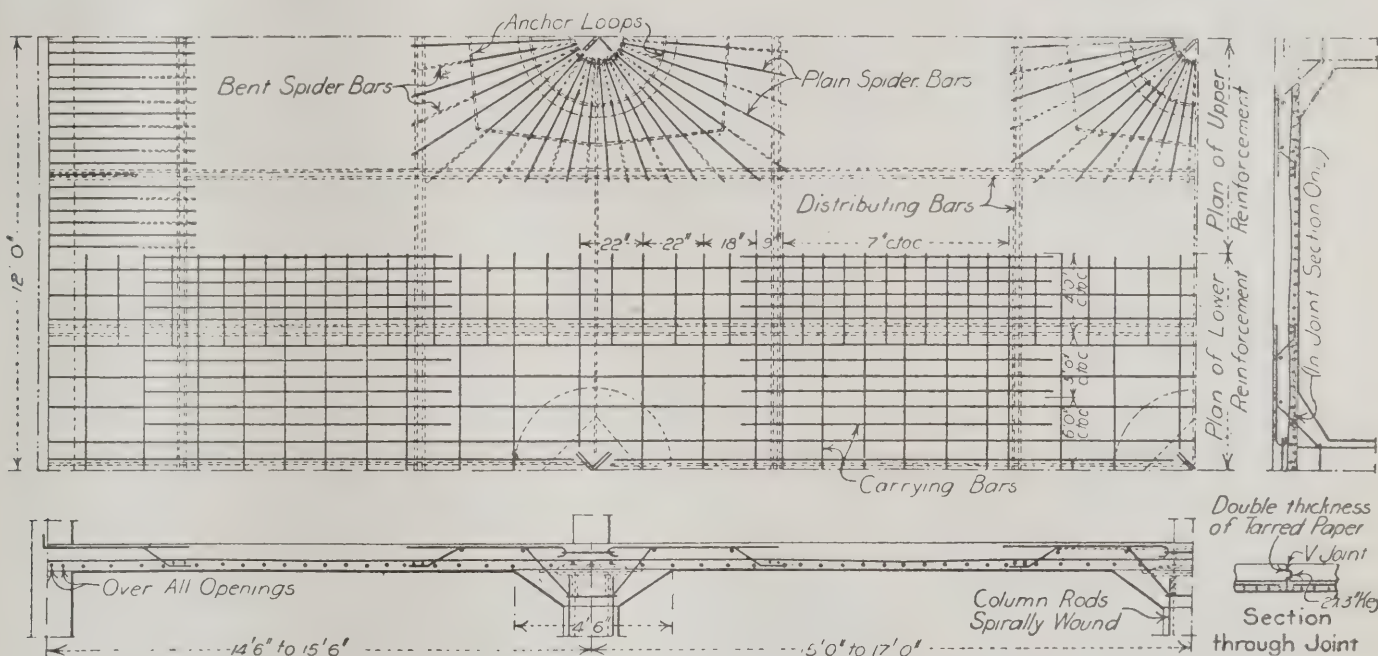
The structure is carried on piles spaced 24 to 36in. on centres, on which is a con-

The storey heights are 8ft. floor to floor in the basement, 13ft. in the first storey, 11ft. in the second to seventh storeys inclusive, and 12 to 14ft. in the eighth storey. The columns are spaced 12ft. on centres longitudinally, and 15ft. 10in. transversely, and are all of circular cross-section. All floors are of the girderless reinforced concrete type, 8in. thick. The roof slab is 5in. thick, and is also of the girderless type.

All floors were designed for a combined dead and live load of 400lb. per sq. ft., using a safe working stress of 650lb. per square inch in the concrete in compression at the centre of the panel, 750lb. per square inch in the concrete in compression at the contour of the column, and 16,000lb. per square inch in tension in the steel. The reinforcement, as will be seen from the illustration, differs materially from the customary reinforcement of girderless floor, and has been developed by the engineers for this structure.

The distributing bars are designed to take up any concentrated load that might be imparted to them by the carrying bars. The spider bars, in addition to transmitting the loading from the distributing and carrying bars to the columns, are designed to provide for the negative bending moment around and above the column top.

Upon the assumption that the total bending moment resulting from the total loading per bay is resisted by the safe moment of resistance of the section around the contour of the column head, the thickness of the head as it approaches the column shaft is increased as the length of the contour decreases, so that the total resulting safe moment of resistance of any circular section or contour at any distance from the centre of the column will be ample to provide for the total bending moment at the particular contour. Theoretically, on account of the rectangular bays or panels, the distribution of stress



REINFORCEMENT OF GIRDERLESS FLOOR SLABS.

crete mat enclosing and covering the pile heads, extending over the entire site and projecting 6ft. beyond the building walls on all sides. The pile spacing, and the number of piles under each footing, are varied in order to secure a practically uniform load per pile of 10 tons, this small figure being selected on account of the variable bottom encountered. The average penetration was 2in. with a 3,000lb. hammer under a drop of 15ft.

On the mat is a separate pyramidal pier for each column measuring 9 by 12ft. at the base, 3ft. square at the top, and 5ft. high. The space between these piers is filled, and on the filling is laid the concrete basement floor, 5in. thick, and reinforced similarly to the floors above, but only about 40 per cent. as strong. The reinforcement is so distributed between the upper and lower portions of the slab as to provide for an upward tide-water pressure due to a head of 3ft., as well as a total live and dead loading downward of 300lb. per square foot, assisted by the direct bearing upon the more or less compressible filling.

Piers of the same type as for the columns are used along the wall line, and carry the walls on arches sprung between them.

In this system the regular slab reinforcement bars, called "carrying bars," run in two directions at right angles to each other, and rest on pairs of distributing bars dividing the main panels into nine smaller rectangular panels. The distributing and carrying bars deliver their loads to the bent "spider bars," the term spider designating the radial bars around the columns. These spider bars are of two varieties; half are bent to conform with the flared column top and engage the lower "anchor loop" around the column. The other half are plain except for a hooked end at the column, and engage the upper anchor loop. The bars near the top of the slab receiving the spider bars, the one circular and the other forming an irregular octagon, called spacing bars, are intended to provide for all tensile stresses in the slab outside of the spiders, and all temperature stresses caused by expansion and contraction through the range of temperature encountered. As no heating is required for the building, the temperature range is a maximum, although not so great as the range of outside temperature. Steel to provide for a range of 70 degrees Fahr. without increasing the stress in the tensile bars over 16,000lb. per square inch is pro-

vided. The distributing bars are designed to take up any concentrated load that might be imparted to them by the carrying bars. The spider bars, in addition to transmitting the loading from the distributing and carrying bars to the columns, are designed to provide for the negative bending moment around and above the column top.

The columns in the basement and the first to fifth storeys have steel cores consisting of four angles riveted back to form a star-shaped section. In the three upper storeys the columns are of concrete reinforced with longitudinal and spiral rods. The columns in the lower six storeys and basement are 18in. in diameter, and in the two upper floors 14in.

The steel cores at the maximum section consist of four 8 by 8 by 1in. angles, and are supplemented by eight 5in. round rods. The smallest steel core consists of four 6 by 6 by 1/2in. angles, and is supplemented by the same size and number of rods. The cores were built up in lengths each one storey in height, and the splices were made by short lengths of angles riveted to each of the angles of the core and bearing on 3/4in. bearing plates.

Where the structural steel cores were used they were designed to provide for the entire loading without being stressed over 12,000lb. per square inch. The concrete surrounding the cores is intended for fire-proofing purposes only, but as a matter of fact the concrete section in all cases is adequate to provide for the load from one floor bay, if all instead of part of the latter should, because of construction defects, be delivered to it. This latter loading cannot accumulate, but is transferred to the steel core of the column immediately below by direct bearing on the column cap. Sufficient steel reinforcement in the form of eight vertical bars enclosed within a spiral of heavy wire is furnished to give the required hooping for the particular stress, as well as to bind the four quarters of the concrete casing to the steel core.

In the three upper storeys where the steel cores are omitted the columns are designed in accordance with the recommendations of the Joint Committee report for hooped columns.

A platform 7ft. wide runs along one side of the building, and in its construction advantage was taken of the possibilities of reinforced concrete to dispense with a costly foundation under the outer edge. The platform is designed for a live load of 300lb. per square foot, and is cantilevered out 7ft. in the clear from the foundation walls with no other means of support. Any support at the outer edge would have required a foundation extending down about 35ft. from the top of the platform, composed probably of piles 20ft. long, and 15ft. of masonry.

The cantilever slab is 8in. thick, reinforced by transverse rods, the percentage of which, in relation to the concrete, is decreased from the wall outward to the edge by stopping certain of the rods at two intermediate points. Distributing bars are placed longitudinally in the middle of the slab.

The interior walls are carried storey by storey upon the floor slab immediately below, and the design is sufficiently heavy to allow partition walls to be erected anywhere in the future without planning foundations for them. Thus the size of rooms may be varied to suit the tenants.

On one of the floors cement was stored when the slab was about six weeks old. Though the bags were piled from 5 to 10 high, it is stated that no cracks resulted. A twin building, of exactly similar design, using the same type of girderless floor, has been occupied for about a year, with all floors carrying full live load, and some considerably more. It is stated that no cracks have resulted.

The building was designed, and the erection supervised by Messrs. Warren and Gerrish, architects and engineers, Boston, who also designed the floor and column forms. It was built by Messrs. James Stewart and Company, general contractors, whose head office is in New York City.

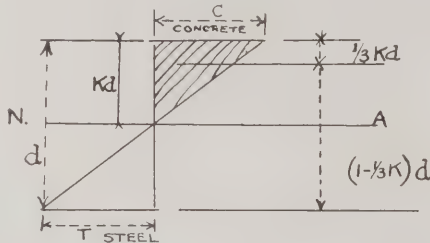
A New Road Between Eastbourne and Hastings.

A project is under consideration for the construction of what will virtually prove a new highway linking up Eastbourne, Bexhill, and Hastings. Should the scheme be successfully carried through, an immensely improved means of communication from Eastbourne to Hastings will be brought into existence; and motor traffic especially will feel the benefit of it, as the whole route will probably command a continuous view of the sea.

ECONOMICAL REINFORCED CONCRETE DESIGN.

It may have occurred to many old students that the design of reinforced concrete work is, to a certain extent, conducted in a haphazard manner; especially is this noticeable when the reinforcement is roughly estimated before the stresses are found, and should the estimate be incorrect, the process has to be repeated. In the case of simple floor slabs, this may be obviated by using the formulæ deduced below, which have proved useful to the writer:

Let m = ratio of the moduli = $\frac{E \text{ steel}}{E \text{ concrete}}$ = say 15.
 d = depth of steel below top surface.
 Kd = depth of natural axis.
 b = breadth of slab.
 C = compression stress (max.).
 T = tensile stress.
 p = ratio of area of steel to area of concrete.



$$\text{Then } \frac{mC}{T} = \frac{Kd}{(1-K)d} = \frac{K}{1-K} \quad (1)$$

But total tension = total compression \therefore

$$pbdT = \frac{C}{2} bKd. \quad \text{i.e., } cK = 2pT. \quad (2)$$

Substituting value of T from equation (1)

$$K = \sqrt{(p^2m^2 + 2pm) - pm}.$$

The above formulæ were taken from the R.I.B.A. Report.

Now the floor slab is only doing its work economically when both steel and concrete are stressed to their allowable stresses at the same time (namely, 600 lbs. for concrete, and 17,000 lbs. for steel). If these values are substituted in equation (1), we get the correct depth of the neutral axis in terms of the depth of the slab.

$$\frac{mc}{T} = \frac{K}{1-K} = \frac{15 \times 600}{17,000} \quad K = .346 \quad (8)$$

The arm of the stresses, i.e., the distance between the centres of compression and tensile stresses may now be found, and is equal to $d(1 - \frac{1}{3}K) = .8846d$.

The ratio of steel to concrete may also be obtained by substituting the values in equation (3).

$$K = \sqrt{(p^2m^2 + 2pm) - pm} \quad -pm. \\ .346 = \sqrt{(15^2p^2 + 2 \times 15p) - 15p} \quad -15p. \\ (.346 + 15p)^2 = 225p^2 \quad 30p \quad (4) \\ p = .0061$$

This ratio of steel to concrete never varies in an economical slab, and is a fixed value. The depth of the N.A. and the arm of the stresses are also fixed.

The results may now be summarised:
ratio of steel to concrete = .0061 } fixed
depth of N.A. = .346d } values.
stress arm = .884d }

The Bending Moment = area \times average stress \times arm of stress.

$$M = b \times .346d \times 300 \times .884d \times \frac{1}{2240}$$

$$M = \frac{300 \times .884 \times .346bd^2}{2240}$$

$$d = \sqrt{\frac{BM}{.041 \times b}}$$

and considering 12 in breadth of slab.

$$d = \sqrt{\frac{BM}{.494}} \quad (5)$$

$$\text{and Steel} = pbd = 12 \times .0061 \times d = .0732d \quad (6)$$

Example:—

Floor 6ft. span. Load 2cwt. per sq. ft. inclusive. Load on 12in. strip = $6 \times 1 \times 2$ cwt. = 6 tons.

$$\text{B.M. say } \frac{WL}{8} = \frac{.6 \times 72}{8} = 5.4 \text{ in. tons.}$$

$$\text{Depth of steel } \sqrt{\frac{5.4}{.494}} = 3.3$$

$$\text{Steel} = .0732 \times 3.3 = .241 \text{ sq. ins.}$$

Say overall depth of slab = $4\frac{1}{4}$ in.
and steel bars = $\frac{3}{8}$ in. every $5\frac{1}{2}$ in.

The extreme simplicity and accuracy of the formulæ above (relatively) will no doubt be recognised by many who have to deal with the design of reinforced concrete.

TERRA-COTTA AND REINFORCED CONCRETE.

SOME OPINIONS BY LEEDS ARCHITECTS.

A recent article in "The Yorkshire Evening Post," calling public attention to the multiplication of terra-cotta buildings in Leeds, appears to have aroused much local interest. The views of four representative Leeds architects are given below:—

Mr. W. H. Thorp, F.R.I.B.A.: "We need, perhaps, to wait a little longer to see whether this new material lasts or not, though I think there is every indication so far that it will do so. It certainly keeps clean, and, seeing that so many reinforced concrete buildings are likely to be put up in future, this terra-cotta will be very serviceable. For a manufacturing city like Leeds, with so much smoke, such building material will answer an excellent purpose, and, though personally I still have a preference for stone, there is a great deal to be said for this particular kind of marble concrete. It will be considerably used in future in the middle of large towns, though I do not think it will be employed to any extent in the suburbs or in the country."

Mr. Percy Robinson, F.R.I.B.A.: "Terra-cotta is being largely used by architects for several reasons. It is generally cheaper than stone, and a client's pocket has frequently to be considered nowadays. It is admirably adapted for reinforced concrete construction, and it is easily washed. From the artistic point of view it is unresponsive, and one cannot expect to get that texture and refinement of line and detail which is obtained in stone. The mistake frequently made is to adapt it to designs for which it is unsuitable, for, like all materials, it has its limitations, and, if these are realised, it is capable of a sound artistic treatment."

Mr. Sydney D. Kitson, M.A., A.R.I.B.A.: "Look at the new white terra-cotta shop in Briggate. It was finished in September, and washed down for Christmas, and it brightened up the street during those dull December days. Of course, all would be well if the smoke nuisance could be done away with, but that will take time. Meanwhile, it is very unfortunate that our local stone, excellent in many respects, seems to suck

in smoke and dirt like a child absorbs mother's milk. Properly fired, this terracotta will stand any amount of bad weather. The architects in Canada use it extensively, and it withstands the keen and prolonged frost of that clime. It goes very well with reinforced concrete buildings, and most artistic structures of the neo-Classical order can be erected in this way."

Mr. G. F. Bowman: "It is most useful material to use in conjunction with reinforced concrete, and its clean appearance gives light and brightness to a dull city. The material need not be either white or whitish. It may be in various colours. In the earlier products the very shiny appearance of the material was rather against securing effective artistic mouldings. But this defect has been partially remedied. I think buildings of this material would be less likely to be scratched or snipped if up to say shoulder height granite or some other such dull material were used. I think terracotta has come to stop, and the finish to the surface will still further improve."

A Leeds contributor favours us with the following observations on the controversy:—

Naturally the strongest opponents of terracotta are the men who cut stone, the masons and carvers who see in it the final extinction of their craft, and those most in its favour are the architects who believe it to be the most logical material wherewith to clothe the modern attenuated structures of concrete and iron.

Basing their criticisms on the "crazed" state of some of the earliest examples of terracotta, the stone cutters maintain that the shell-face will quickly perish, forgetting that the experimental stage of the last ten years has passed, and that from the standpoint both of durability and artistic appearance, terracotta is improving day by day. The hot colours and fierce glazes have toned down, and a certain uneven surface, quite suitable to an earthy substance, has taken its place.

Another of the criticisms the masons raise is the wide uneven jointing, which is very much in evidence in all terracotta work, and they make the comparison, rather unfairly I think, between it and the finely chiselled jointing of ashlar masonry. Owing to the nature of the material and the insuperable difficulty of obtaining equality in the firing, the irregularities and unevenness should be candidly confessed when the design and detail of the work are first evolved, remembering its plastic nature and that perfectly horizontal and vertical lines are impossible, and that fluted columns are most unsuitable. As a material to ameliorate the somewhat Stygian darkness of the smoke begrimed streets of our northern sandstone cities, white terracotta is an invaluable adjunct, as it is easily cleaned.

The public, struck by the whiteness of the material—as something distinct from the colour known as "terracotta"—has fastened on to them the term "pot" buildings.

Now, in Yorkshire, the term "pot," is applied not only to brown earthenware utensils, but also to the finest china articles, so that in calling buildings by this name there is a suggestion of fragility and hollowness, and a slightly contemptuous inference that they are "fancy affairs."

However, they have come to stop, and, let it be confessed at once, their great attraction to building owners is their cheapness. But cheapness alone can never be

an argument against them: a thing may be both cheap and good.

The architect's ideal is to use local materials; that is understood. How then does this work out when applied to the question of Leeds shops and warehouses? There is an excellent local material, ready to hand—stone—suited to stand everything that is required of it, except the blackening effect of the local atmosphere. The geographical position of the business quarter of the city, at the bottom of Airedale, surrounded by factories, means that practically throughout the whole winter the atmosphere is, to put it mildly, charged with smoke, with accompanying fog, and that in summer the sunlight is measurably less in the centre of the city than in the outskirts. It means, then, that the local stone with its coarse texture and porous nature, is best seen to advantage when decorated with lichens, which emphasize its texture—it is found in dry walls and dressings on fells and farmhouses in the Yorkshire dales,—contrasting with its grim blackness, as displayed in Leeds Town Hall. Its only excuse, if excuse it be, is that it is decidedly black, thereby inviting comparisons with the close hard stone which gives to Bradford its dingy appearance, contrasting with the rich (?) deep blackness of Leeds stone buildings.

Another Leeds contributor sends us the following comments:—

Commercially, terracotta in Leeds is a local material. Is not that in itself some justification for its use? It has been claimed that more labour is employed in making the terracotta than in working the stone for a building. Whatever be the truth of that, it is irrelevant from the architectural standpoint. A great reason doubtless, is its adaptability to reinforced concrete construction. The artistic objection to the shiny surface of the old terracotta no longer applies to the newer material with its dull white finish. To point out the faultiness of the joints, the irregularities, the twists, and misfits of the materials is also, in reality, utterly irrelevant, because it is not stone construction, with its exact neatness, but a construction of blocks of fired clay.

The popular objections, if there are any, are simply due to the fact that these buildings are strange, strange in that they are white, and that though they become black in a few months, they can be washed, and are white again.

Of course, a general adoption of its use would raise new architectural problems in treating, let us say, a whole street in this material, for now these buildings stand isolated by contrast with their grimy neighbours and perhaps this gives more value to their simple detail than they would have otherwise,—but this can be left to the future.

The writer's personal sympathies, from a pecuniary standpoint, are with stone construction, but it must be admitted that as long as the present waste of coal—in smoke—continues, the local stone of Leeds is unsuited for buildings in the city. And here lies the value of the discussion in the press, and the more valuable object lessons of the white buildings—that the public is realizing that smoke is to blame, and realizing, too, that to remedy this state of affairs more is necessary than repressive fines and prosecution of owners of factory chimneys who break the law—that there must be an adoption of more scientific and economical methods of heating.

INSTITUTE OF BUILDERS' DINNER.

The annual dinner of the above Institute was held at De Keyser's Royal Hotel, Blackfriars, on Tuesday, January 24th. Among the guests were Sir Aston Webb, C.B., R.A., Mr. W. E. Riley, F.R.I.B.A., Mr. W. H. Romaine Walker, Mr. S. Chatfield Clarke, Mr. F. G. Rice, Councillor S. Smethurst, J.P., etc. At the conclusion of the dinner, the usual loyal toasts having been duly respected,

Mr. Leonard Horner, proposing the toast of "The Professions," said that English architecture was pre-eminently above that of any other country to-day. The people who read the history of these times would, he hoped, see the improvements made in the dwellings erected for habitation by the lower classes. To the architects, who had been so prominent in promoting the Town Planning Bill, might with confidence be left the planning and scheming of the houses of the country. Having alluded to the Victoria and Albert Museum, the speaker turned to the profession of surveying, the aid of which was required in all dealings in land. There was also Form IV. to be adjusted. The quantity surveyor, less known to the public, was, he had been told, a gentleman appointed to tell the builder what he had left out of the quantities and accounts; but the builder stood in no need of this aid.

Sir Aston Webb, C.B., R.A., replying for the architects, said he could not congratulate them on prosperous times. The keen competition, resulting in low and cutting prices, was not good for builder, architect, or client. There was a tendency to think that the lowest price was the only thing desirable; but this was a small thing in comparison with having a thoroughly well-constructed building that would require no subsequent repairs. They had every reason to be proud of the builders' work in England. He congratulated them on being connected with so noble an art, and wished them a prosperous future.

Mr. G. Corderoy, F.S.I., replied for the surveyors.

Mr. W. H. Romaine Walker proposed the toast, "The Institute of Builders and its President," and observed that the more he met builders the higher rose his opinion of the integrity of the British builder. In the whole length of his practice he had never had a dispute with a contractor; and he had certainly not personally encountered the gentleman referred to by his Christian name, Jerry, although quite lately he had come across him in the time of Adam. Referring to sub-contracting, the speaker doubted whether it was possible for one human being to produce a great work alone. If only a greater sense of brotherhood existed between all, there would not be so much patchwork. He did not know whether the Institute of Builders had ever applied for a Royal Charter. In view of Coronation year, it would be most appropriate to approach His Majesty to see whether this dignity was not possible.

The President (Mr. Frederick Higgs), replying, said he had been asked in what way the Institute differed from the London Master Builders' Association. He would give a short historical account. In 1834 the guilds and their property were gradually slipping out of the hands of the craftsmen, and the Society of Builders was formed. This society dealt with the trade matters which were now tackled by the L.M.B.A. Shortly after this, the Central Association of Master Builders of London

(the immediate parent of the L.M.B.A.) was formed, and in 1884 the Society of Builders became the Institute of Builders. Having referred to the Institute's educational activities, and to clauses 20, 27, 28, and 30 of the form of contract, which stood in urgent need of amendment, Mr. Higgs urged non-members of the Institute to join, now that they knew a little of its aims and objects.

Mr. H. T. A. Chidgey, proposing the toast, "The National Federation of Building Trades Employers of Great Britain and Ireland," enumerated the advantages of unity, and alluded to the Quantity Surveyors' Association's activities in the direction of federation.

Mr. Samuel Smethurst, J.P., responded, observing that the Institute of Builders represented the aristocratic side of the building trade, and the National Federation the democratic. Apathy was largely disappearing, and the Federation was doing a great work. The employers had been organised, and it was a great testimony to their efficiency that differences between them and the employees could be met and composed by argument. Mr. Smethurst concluded his speech with an earnest appeal for a more energetic endeavour to raise the standard of the dwellings of the poorer classes.

Mr. J. S. Holliday then proposed the toast, "Our Guests," to which Mr. W. E. Riley replied, observing that the building trade had not reached within his memory so high a standard as at the present time. He had built houses to accommodate 48,000 of the poor; and this he considered the greatest honour and distinction ever conferred upon him. He had had only two arbitration cases in the course of his career, and had never made an enemy of a builder in his life. He had found that the builder, if treated fairly, would generously respond.

MANCHESTER SOCIETY OF ARCHITECTS.

MR. J. L. BALL ON THREE EAST
ANGLIAN CATHEDRALS.

On Wednesday, January 25th, a lecture was given by Mr. J. L. Ball, Professor of Architecture at the Birmingham University. After a brief introduction indicating the necessity for the study of ancient architecture and suggesting some methods of study, Mr. Ball proceeded to give a general account of the three East Anglian Cathedrals of Peterborough, Ely, and Norwich, pointing out the close resemblance which originally existed between them, their characteristics as Romanesque minsters, and the changes which have taken place in them in later times. Then, turning aside from questions of archæology, the architecture of the three cathedrals became the subject of discussion, and the opinion was expressed that here, at any rate, the architecture of the twelfth century is supreme in all purely architectural qualities; attention being specially directed to the expression in it of the sense of power. Nor is this expression of power merely crude and uncouth; it is the work of deliberate and expert artists, marked by maturity of style and refinement of proportion. The nature of proportion in architecture was next discussed at some length, and illustrated from these cathedrals, whose architecture is so sparing of decorative accessories, where we feel as we seldom can how little architecture need rely on ornamental details, how much it depends upon proportion. Some of these

proportions were then noted and compared, particularly the great galleries, and the division of the internal height into three nearly equal parts—a notable characteristic of this group of cathedrals, which connects them with Winchester, Cerisy, and l'Abbaye aux Hommes.

Mr. Ball then entered upon a consideration of the exterior architecture of the three cathedrals, noting a certain inferiority to the interior, the difficulty in all architecture in the grand manner of binding together interior and exterior in organic unity. Nevertheless, certain fine qualities are noted in the exteriors, and it was pointed out that both in the Romanesque and Gothic periods the resources of mediæval art were concentrated on the west fronts. The only west front of Romanesque work in the three cathedrals is that of Ely, and this was described. Passing on to the west front of Peterborough, the opinion was hazarded that we have here a Romanesque design translated into the new Gothic manner of the thirteenth century. The essential difference between Romanesque art and Gothic was discussed, and the new spirit introduced into architecture was described and illustrated by the fine scenic example of this west front of Peterborough. These west fronts suggest the principle of frontal design, what Professor Loewy calls the "Law of Frontality," the law of design by virtue of which an object is always conceived in its broadest and most comprehensive aspect. The lecturer discussed this law in its relation to architecture, and also the corollary to it called the Law of Approach, showing that in these laws we obtain a glimpse into the method of Romanesque and later Gothic design. He then analysed the principles of Romanesque design as exemplified in the East Anglian cathedrals, pointing out that the Romanesque architects were essentially arch-builders, using arcading not only for structural reasons but for the purposes of art. Attention was directed to the æsthetic value of the semicircular arch in the sequence of arcades, to the solution of the problem of stability by massive supports without the aid of buttresses, and to other points in the architectural expression of arched construction suggested by a study of this group of cathedrals. The question was asked whether it is possible to detect the peculiar quality in the work of the twelfth century which marks it off from other arched construction, and the answer was found in the expression of flexibility, of the elasticity of structure; and it was shown in what way this expression of flexibility is obtained, the explanation being based on the circumstances under which Romanesque architecture was done, and the conditions of building wholly unlike those of the present day.

Similar reflections on the circumstances of ancient building were next shown to afford some clue to many of the puzzling irregularities in it, and the question of the time actually spent in building a cathedral was fully discussed.

The name "Norman" often applied to Romanesque art in England brings up the whole subject of the local schools of Romanesque, their diversities, and the essential unity of idea which gives to Romanesque architecture everywhere its distinctive character. The paper went on to describe the main purpose of Romanesque from the time when it first emerges from the Roman basilica, its purpose as essentially ecclesiastical art, and as expressing the Catholic ideal.

In these cathedrals of the twelfth century we see Romanesque architecture in the maturity of its genius, and thus, without any period of decadence, it passed. We have much to learn from these great works, and perhaps the most valuable lesson we can learn from them is not to attempt to reproduce them. J. T. H.

PICTURE EXHIBITIONS.

The Burlington Art Club.

We ought to have drawn attention before to the collection now on view at the Burlington Art Club, which includes some very fine examples of old furniture. There are a beautiful English inlaid chest of drawers, late seventeenth century; two grand Italian cassones of the sixteenth century; two splendid oriental jars with a history behind them; two English hall chairs (eighteenth century), with carved eagles' heads on the backs, which have a curious resemblance to French Empire furniture; and an exceedingly elaborate specimen of a buhl cabinet, French seventeenth century work. Two of Chippendale's "ribbon-back" chairs are most remarkable specimens of finished and conscientious workmanship, which might bear examination with a magnifying glass; showing how honest work will do something to atone for radically bad design. The ostensible motive of the exhibition was a collection of the paintings of Le Nain, most of which might, however, have passed into oblivion without the world losing much; the two best are two groups of three children, numbered 1 and 36. There are some good works also by Richard Wilson and Turner, and a Whistler "Nocturne." The club exhibitions are not, of course, public, but access is readily granted to any one taking an interest in ancient art.

The Fine Art Society.

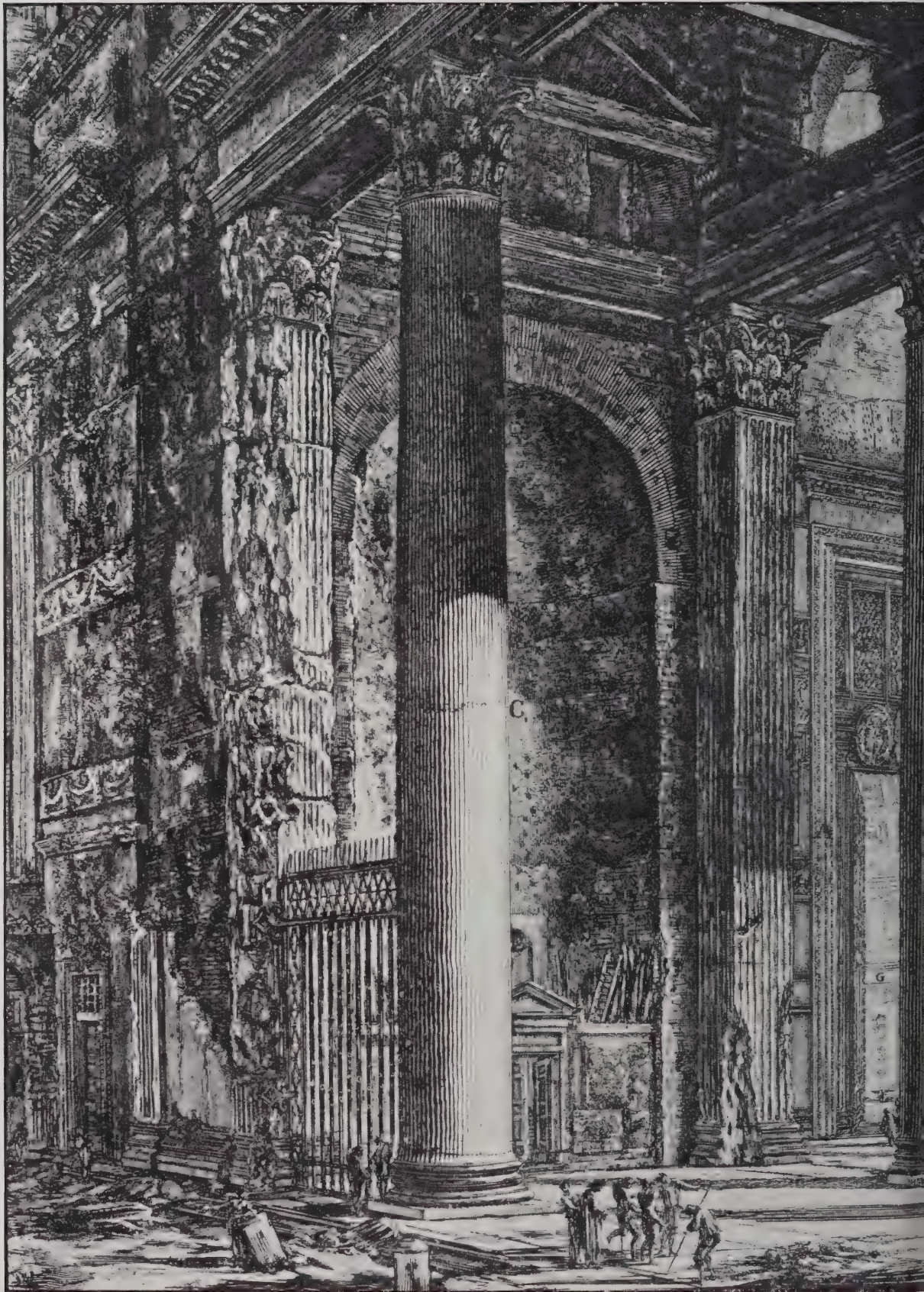
At this gallery there is a collection of water-colours by Mr. A. Pisa (we presume, from his name, an Italian artist), which ought to interest architects, as they largely consist of drawings of remains of ancient architecture at Selinonte, Pompeii, and elsewhere, very well executed. "The courtyard of the house of Vetti," at Pompeii, is one of the best Pompeii pictures we have seen; we have also "Dead Selinonte," a confused heap of early Doric fragments; "The Greek Temple at Segesta"; "The Cloister at Monreale Palermo"; etc. The drawings combine a fine water-colour style with architectural precision and accuracy.

Messrs. Tooth and Sons' Gallery.

The exhibition of water-colour drawings by Dutch artists, at Messrs. Tooth's, in New Bond Street, includes some excellent work by rather new men. The small cattle pictures, "Ploughing," and "Milking Time," introduce us to the work of A. J. Groenwegen, who is a master in this class of subject; and a landscape by W. Steelink, "Fresh Pastures," is still finer. Steelink is evidently a follower of Mauve, in composition at least, but with a style of his own. There are other good works among the twenty-three drawings exhibited.

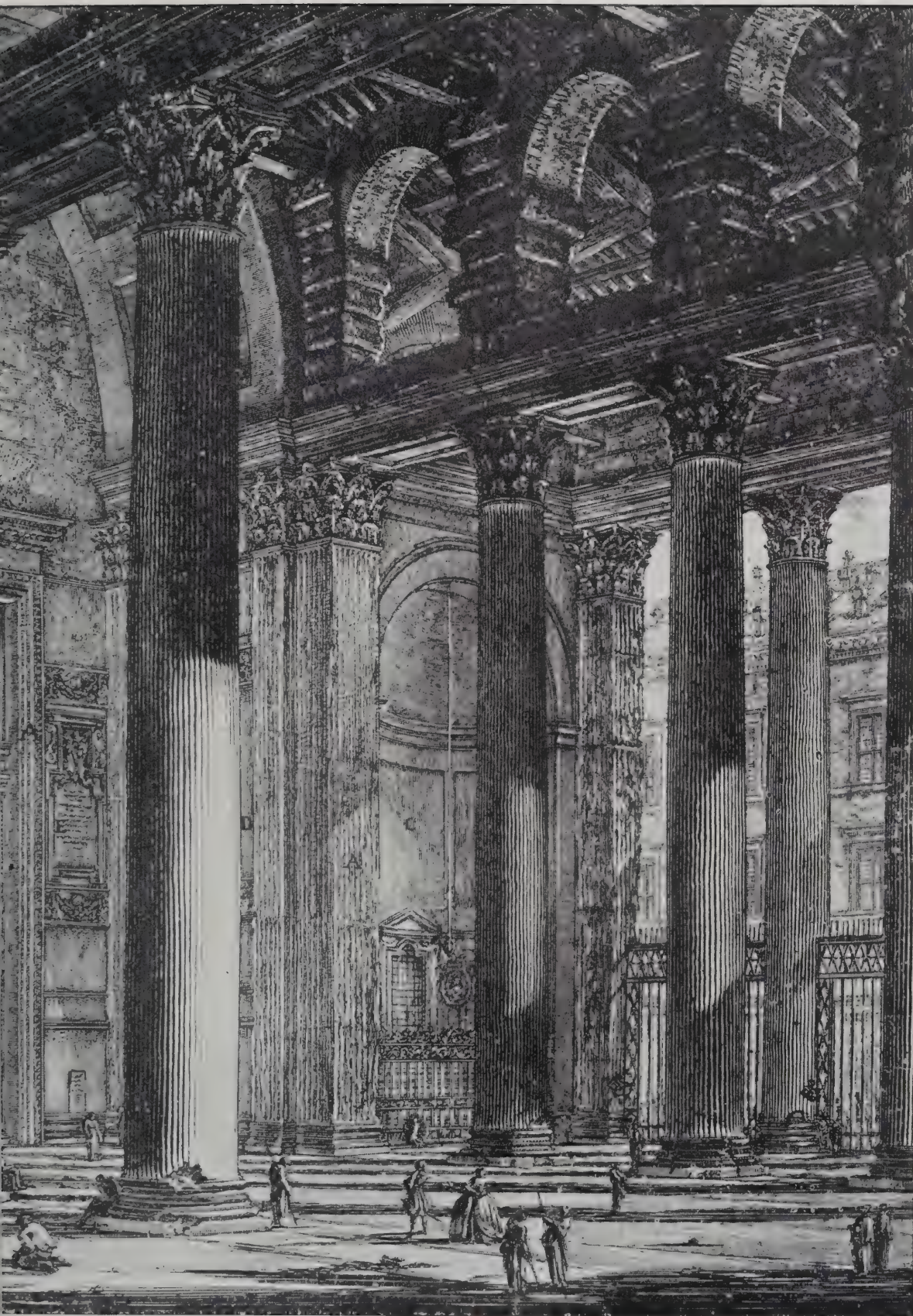
Business Prosperity.

Gratifying indications of a return to prosperity are becoming now more plainly visible. At the annual dinner at which Messrs. Rea Metal Casements entertained their employees at Ford's Knotty Ash Hotel, Liverpool, Mr. Rea said that the firm had experienced a very prosperous year, and that everything pointed to a continuance of the success.



THE PANTHEON, ROME: VIEW FROM THE

(From Piranesi)



LOOKING OUT THROUGH THE PORTICO.

Romane.")

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 8th, 1911.

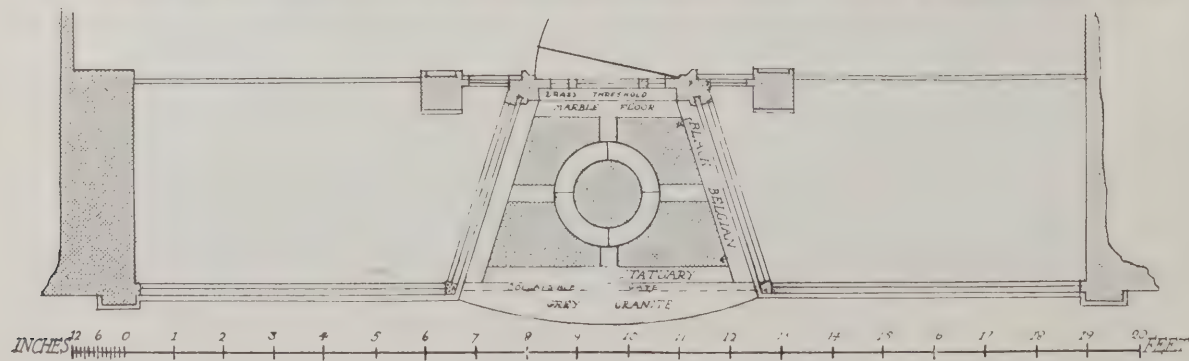
Volume XXXIII.

No. 837



This chimneypiece is in one of the chief rooms on the first floor. It is of oak.

CHIMNEYPIECE IN NEW BUILDING FOR H.M. OFFICE OF WOODS, FORESTS, AND LAND
REVENUES, WHITEHALL, LONDON. JOHN MURRAY, F.R.I.B.A., ARCHITECT.



In the design of this shop front the endeavour has been to meet modern requirements while retaining a certain amount of architectural dignity. The woodwork is of Austrian fumed oak, on a granite base.

SHOP FRONT, No. 76, MURRAYGATE, DUNDEE. H. AND F. THOMSON, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

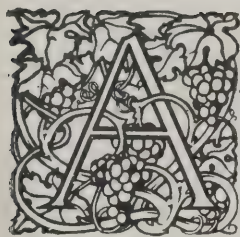
FEBRUARY 8th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 837.

NOTE: The List of Contents will be found on page V. of the front advertisements.

Piranesi.



GREAT illustrator of architecture may, in his own way, do almost as much for the art as a great architect. If he does not produce great buildings, he records their effects; and if he be an artist of genius, with the power of exhibiting his subjects in a striking and original manner, he can stimulate

both the imagination of architects and their pride in their art, and can impress the general public with an added sense of the grandeur and the poetic significance of that art. Prout, in spite of a somewhat mannered style, must have quickened the public interest in the monuments both of Classic and Mediæval architecture; the late Mr. Fulleylove's drawings of Oxford buildings probably led many to realise for the first time what an amount of architectural beauty and refinement is collected within the narrow limits of the old University city; and Mr. Sargent's few oil-sketches of architectural subjects show such an extraordinary power that we may well wish that he would devote more of his time and genius to work of this class.

But of all illustrators of architecture Giovanni Battista Piranesi, born at Venice in 1720, stands first both for the amount of his work and for the genius in composition and execution displayed in it; and this though he was an artist in black and white only, on which he relied entirely, after having vainly attempted to master the technique of painting to his satisfaction. He was one of the most remarkable of a type of artists who seem to have been born black and white, so to speak, and who only show their true native power in that restricted medium. Pannini, Guardi, and Canaletto, all treated architecture in oil-paintings on a large scale; but they are out-classed by Piranesi's etchings. Pannini's architectural compositions are conventional and stagey in comparison; Guardi and Canaletto painted one class of building and one class of effect, in a broad and sunny style, but without much variety or power of effect. Claude introduces Classic ruins with fine and poetic effect in his pictures, and Piranesi may have been indebted to him both for hints in composition and for the direction of his taste towards the study of the remains of

"The glory that was Greece,
And the grandeur that was Rome,"

as Edgar Poe expresses it.

But there was nothing of Claude's gentleness either in his nature or in his style. He is the Michelangelo of etching; he handles the etching-needle with the same kind of *furor* with which Michelangelo is said to have handled the chisel. In the use of the black line he had found his real power. In his bold contrasts of light and shade, in his cavernous masses of nearly black shadow—never, however, entirely choked with line: always with sufficient points of light to give them depth and consistency—we see the impress of a powerful and almost defiant genius, despising all mere prettiness of effect, bent on tearing out the heart of the mystery which lurked in the massive but crumbling remains of the Roman

and archaic Greek buildings, which appealed so strongly to his sense of architectural grandeur and historic association.

For Piranesi seems to have been stirred to an almost passionate interest in the remains of ancient Roman architecture. Though a Venetian by birth, it was almost entirely from Rome that he drew his inspiration; the fragments of her once great architecture were to him not only objects for picturesque treatment, but evidences of a great historic past which had captivated his imagination. In his own words, as quoted by his biographer, Mr. Samuel, he expressed his conviction that he was doing a great and lasting work in making records of these remains: "I dare to believe that, like Horace, I have executed a work which will go down to posterity and which will endure for as long as there are men desirous of knowing all that has survived until our day, of the ruins of the most famous city of the universe." And he was right, though not exactly in the way that he imagined. We cannot agree with his biographer in the quite unnecessary remark, "This is pompous." It is not pompous at all; it was a perfectly justifiable recognition of the greatness of the work that he was doing. He could not foresee the time when learned and painstaking archaeologists would vie with each other in trying to wrest their secrets from all the old stones of Rome; when a society would be founded for the especial study of Roman remains; when the Forum would be scraped to the bone to get at its history. Piranesi was no archaeologist in the modern sense of the word. But he was something better; he was a poet, who has preserved for us the impression which the ruins of Rome made when they were still mysterious, half-buried remnants of a great past, overgrown with Nature's vegetation. Modern archaeologists are indefatigable in getting at the facts in connection with these architectural remnants. Piranesi gives us their poetry.

Of his three great collections of Roman etchings, one only, "Architettura de' Romani," attempts something like an architectural analysis of construction and design; giving diagrams, for instance, of his idea of the function of the triglyphs, as representing the ends of a system of beams seen in a rather naïve system of construction in the rear. The introduction of such a diagram, and the inclusion of views of the Temple of Concord at Agrigentum, resulted from the fact that Piranesi believed all the archaic architecture on Italian soil to be Etruscan, and therefore (not unnaturally) claimed that it was to Etruscan and not to Greek influence that Roman architecture was due. Architectural history was in a primitive phase in those days. It was to the same conviction, no doubt, that we owe his grand drawings of the *Pæstum* Temples, in which the massive archaic Doric columns, with their strongly marked entasis, stand up, black with age, in his foregrounds. "L'Antichità Romane" consists mainly of comparatively small views, the object of which seems to be purely illustrative, a pictorial record of the various buildings. It is in the two volumes of "Le Vedute Romane" that we see Piranesi at his highest as an artist. These are etchings on a very large scale, and of the most powerful picturesque effect. They are probably, however, accurate also, at all events as to the condition and appearance of the originals as he saw them in his day. He appears to have made some mistake in regard to the dome of *Minerva Medica*, for his

drawing represents the dome built on the decagon plan of the substructure, whereas Choisy figures it as a circular dome showing the earliest example of small pendentives in the ten angles. Perhaps, however, the explanation is that the rounding of the interior of the dome, and the formation of the pendentives, were carried out only in the cement covering, and that Choisy saw indications of this which Piranesi missed. As an example of the work in the "Vedute Romane" we have reproduced, in our principal plate, the fine and learned drawing of the view from within the Pantheon, looking out through the colonnade of the portico; a very unusual view, and not so well known as some others of Piranesi's. It shows that when Piranesi got away from ruins and into a structure where the architecture was in good preservation, he could be as precise and careful an architectural draughtsman as anyone, without losing his remarkable power in effects of light and shadow. The illustration on this page, also from the "Vedute," showing the half-buried columns of the temple

with Cellini, though he did not commit Cellini's crimes. It is characteristic, too, of his passionate attachment to all associations with ancient Rome that he proposed at first sight to a girl whom he met in Rome, merely because the grandiose style of her beauty convinced him that she was descended from an ancient Roman stock; and the marriage thus improvised seems to have been a happy one, except so far as poverty cast some shadow over it; for Piranesi seems to have been miserably paid for his arduous and unremitting labour. Mr. Samuel seems to imply that some part of Piranesi's work went into Adam's and Chippendale's furniture designs; they were both acquainted with Piranesi, but we have compared Piranesi's volume, "Vasi, Candelabri, etc.," with two of Chippendale's publications, without perceiving the slightest trace of so strong a hand as Piranesi's anywhere. Adam and Chippendale, indeed, compared with Piranesi, were but drawing-room geniuses. But as a whole we like Mr. Samuel's book very much; it is not too long or



THE COLUMNS OF THE TEMPLE OF JUPITER TONANS, AS SEEN IN THE EIGHTEENTH CENTURY.

(From Piranesi's "Le Vedute Romane.")

of Jupiter Tonans (which have been also the subject of one of Prout's finest sepia drawings), is a good example of the value of Piranesi's etchings in recording the aspect of old Rome in what may be called its pre-archæological period.

Few of those who know and admire the work of Piranesi the artist know very much of Piranesi the man, and the short and well-written biography of him by Mr. Arthur Samuel* fills a gap in our architectural literature. Here many of us may learn for the first time something of the character of the artist whose works have been long familiar to us, and will not be surprised to find that the defiant force and vigour of his etchings were only a reflection of the character and temperament of their author, who seems to have been throughout his life always ready for a fight with any opponent, and presents in this way somewhat of a parallel

voluminous, and it is well written, well illustrated, and well printed. We have not, however, reproduced any of the illustrations in the book, preferring to make our own illustrations from two of Piranesi's original prints.

One remarkable work, differing from all the others, is the series of plates, entitled "Carceri d' Invenzione," which, we learn from Mr. Samuel's book, were the result of a kind of feverish nightmare which he tried to realise in etching. These are most wild and tragic dream-pictures of scenes of desolation, of weird dungeons festooned with chains and ropes, and are among the most extraordinary inventions ever made by an artist. In execution they are far inferior to the "Vedute," being scratchy and hurried in line and shading, as if the author were bent on realising his idea in the shortest possible time. Professor Blomfield has shown reason to think that Dance was more or less indebted to the "Carceri" for his grim architecture of old Newgate.

The Institute Gold Medal.

THE decision of the Institute Council to offer the Royal Gold Medal this year to Dr. Dörpfeld is not one in which we can entirely sympathise. The learned German archæologist is a most fitting recipient of the honour at some time or other, although he has started at times some very preposterous theories, which all seem to be obediently accepted by his ring of admirers; but his reputation is that of an archæologist, not an architect; and the medal was awarded to an archæologist, Dr. Evans, only two years ago. We should like to see it more decidedly treated as an acknowledgment of works carried out by architects. We might add that there seems to be a great neglect of the claims of French architects. France contains a larger number of architects who, for their executed works, are worth the medal, than any other country at present can show; and the medal has never been offered to the architects of the three most beautiful or remarkable modern buildings in Paris, who certainly earned the distinction: M. Nénot, for the New Sorbonne; M. Ginain, for the Musée Galliera; and M. Girault, for the Petit Palais. M. Ginain, unhappily, is beyond the reach of the honour; but either M. Nénot or M. Girault should have been preferred to an archæologist.

The Mall Improvement.

WHAT appears to be the conclusion for the present of this matter is certainly not creditable to the Office of Works, nor to its present management. The County Council, from a desire that the Coronation ceremony should not be hampered or injured in effect by inability to use the triumphal arch as the outlet from the processional road, has, in a spirit of perhaps too great liberality (from the point of view of the ratepayers), offered to expend £75,000 in the necessary purchase and preparation for widening the entry into Charing Cross, on the condition that they have no further responsibility in the matter and that the architectural completion of the entrance must be undertaken by the Government. The proposal has been received at the Office of Works with expressions of astonishment, and even anger, from which one can only gather that the First Commissioner or his advisers have totally forgotten the whole history of the Processional Road. From Buckingham Palace into Charing Cross it was a national matter from the first, and not a municipal one. The road took a turn at a decorative fountain, from which point eastwards it was to be on the axis line of the Strand, but was still part of the whole National memorial. Now the Office of Works, in effect, say: "Because we have built an arch at the turning-point of the road, in place of the fountain, therefore our responsibility for the eastern portion of the road ceases." The plea is absurd. The whole scheme of the roadway opened into Charing Cross was part of the National Memorial, and the County Council were never concerned in it at all. We apprehend that the Government will, sooner or later, be compelled by public opinion to accept this view.

A Discovery about Nonsuch Palace.

IN the February issue of *The Architectural Review*, Mr. Alfred W. Clapham announces a discovery he has made in connection with the Palace of Nonsuch. Of this wonderful building, the most important of the five which Henry the Eighth erected in the course of his thirty-eight years' reign, nothing now remains, and for some image of it we are left to old prints and records. What is known of the building is derived chiefly from the Parliamentary Survey taken in 1650 (which gives a detailed account of the palace and grounds) and from two views—one by Hofnagle, and the other an inset in Speed's Map of Surrey. Both of these represent the garden or south front of the house, and the appearance of the north front and sides has up to the present

time been quite conjectural. Mr. Clapham, however, is able to reproduce a third view, taken from the north-west, showing this front and the flank of the building. The original engraving was published by the Society of Antiquaries in 1765, with the title "Richmond Palace from the Green." It is clear, however, that this picture is not Richmond, but Nonsuch, and one can only be surprised that such an interesting fact has never before been discovered. The Palace of Nonsuch achieved a reputation for magnificence throughout Europe, and it must always be a heavy indictment against the first Duchess of Cleveland that she should have utterly destroyed the building, and cut up the park into farms. Fragments of the palace found their way to Gaynsford Hall, Carshalton, to Durdans by Epsom, and to the vicarage at Ewell, but these houses have since been rebuilt, and all the authentic remains of the most remarkable of Tudor buildings lie buried beneath the turf of Nonsuch Park. The archæologist is apt to think that monastic houses and feudal castles are alone worthy of his attention; but, as Mr. Clapham points out, the recovery of the ground plan of Nonsuch would be an achievement of even greater architectural value, while its wealth of historic associations places it far above them all in sentimental interest.

There are many other good things in the February *Review*, among them being the first of two articles by Mr. Arthur Keen on "The Ceilings of the City Churches," the concluding portion of the article on Greenwich Hospital (finely illustrated), some beautiful photographs of notable examples of furniture in the collection of Mr. W. H. Lever, and, in the Town Planning Supplement, an article on a curious proposal to construct a new bridge across the Seine at Paris in the form of the letter X.

Housing and Town Planning: "The Dream and the Business."

MR. ALDRIDGE, of the National Housing and Town Planning Council, delivered, at the Council meeting of the National Federation of Building Trades Employers, at the Trocadero Restaurant, Piccadilly Circus, on January 24th, an interesting address on the administrative aspects of the Housing and Town Planning Act. His main object was to urge master builders to engage actively in the administration of the Act, and especially to assist in the sweeping away of wretched hovels, and in the substitution of a type of building that should be incomparably better both hygienically and æsthetically. He threw out a not unnecessary word of warning on an aspect of the question that hardly tends to edification. The Act, he said, while it is undoubtedly, in principle, deserving of all sympathy and praise, was by no means free from what he called "heartbreaking intricacies"; and, as he further remarked, it would be strange indeed if, in so new and so large an enterprise, there were not, at the beginning, all kinds of crudities in the details; and it would be equally strange if the administration of the Act were not beset by the advocates of all kinds of fads and follies. The crudities will disappear with experience, and the machinery of the Act will be improved and perfected step by step, as in the case of mechanical inventions—such, for instance, as the motor car, which was cited as an instance of vast improvement upon the original conception; while for the fads and follies of well-meaning but uninformed amateurs, the professional and practical knowledge of architects and builders will afford a wholesome corrective. There is no difficulty, therefore, in subscribing to Mr. Aldridge's earnest exhortation to professional and business men "to come right forward in the front rank and help to shape and mould the movement on right lines and guide it to right issues." Mr. A. W. Sinclair, in proposing a vote of thanks for the address, referred to Continental instances of town planning, in which the builder and the private owner had been made to suffer great hardships; and Mr. Aldridge's cheery rejoinder that

"we indeed ought to improve on the example of the Continental nations, and profit by their mistakes" is a courageous way of looking at the matter; but, like Mr. Sinclair's statement, it emphasises the necessity for keeping a watchful eye on the movement.

The St. George's Hall Controversy.

ST. GEORGE'S HALL, at Liverpool, is the finest example in Europe of architecture of the Greek revival, the work of an architect who was superior in genius and originality to either of the two most celebrated German architects of the same school, Schinkel and Klenze; and the controversy which has raged in Liverpool over the proposal to blend with it a monument of the late King—a controversy the bitterness of which can only be realised by those who have seen the Liverpool papers of the last two or three weeks—is at all events a satisfactory indication that there are a number of people in that city who really care about their great building, and who can be moved to indignant protest over any proposal to interfere with its architectural lines.

Apart from the purely architectural question, we should say in the first place that the proposal to connect a Liverpool memorial to King Edward the Seventh with a special building, so as to appear almost a part of its architecture, is misconceived. A Liverpool memorial to the King is connected with the City of Liverpool as a whole, not with St. George's Hall, or with any other special building. Such a monument might fitly be placed in an open space in front of a great building, or surrounded by great buildings; but to connect it architecturally with one particular structure is to limit its significance, and to convey a wrong idea.

The architectural question is, however, that in which we are most interested, and from that point of view we are absolutely opposed to the proposal which has been the occasion of the controversy. It is a proposal to cut two flights of steps through the high podium wall before the south end of the building, and on the centre line between them to place an equestrian statue on a very high pedestal, which will thus become, practically, a part of the architectural composition of the building.

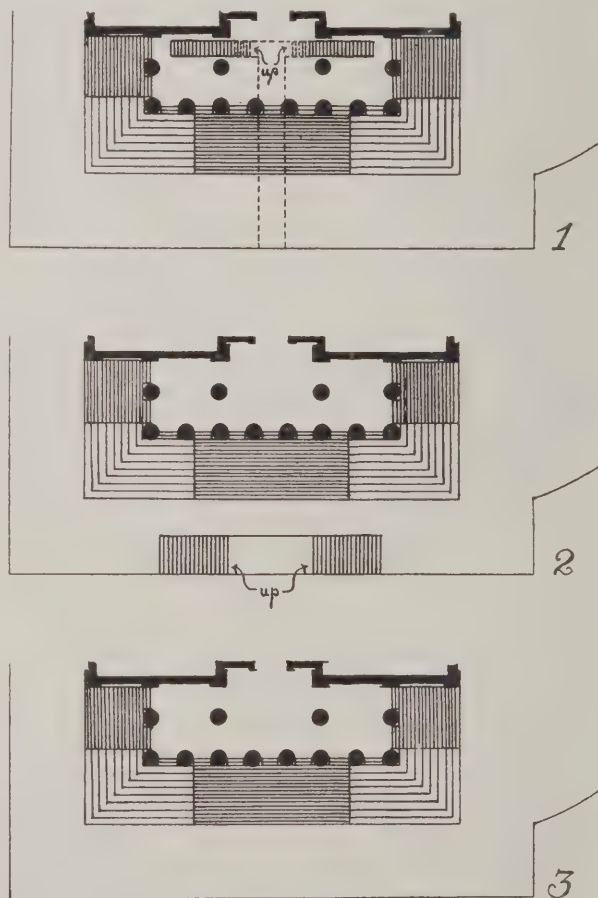
It should be apparent at once that to do this is to break up the monumental grandeur of the building, and to thrust into the composition a feature which is intrusive and out of scale with it. But there is more to be said than that.

In the first place it is a disadvantage in the position of St. George's Hall that its principal facade, to the south, with the portico and pediment, fronts towards a slope of the ground at right angles to the longer axis of the building; a very bad position for a building on Classic lines. Now, the advantage of the high mass of wall at this point, which some people say is so uninteresting, is just this: that it completely separates the building from the sloping road, and gives it a level base so strongly marked that the eye is fixed by that, and can ignore the slope of the road at the foot of the wall, as something unconnected with the building. Even some of those who support the proposed scheme seem to perceive that there will be difficulties with the two flights of steps, which ought to be symmetrical, but cannot be so on account of the slope of the ground; but no one seems to have perceived that it is precisely the existing high podium wall which gets rid of this disadvantage of site.

The other objection in our mind, which no one seems to have fully realised, is that to erect a lofty monument in close connection with a pedimented facade, and in line with the apex of the pediment, is *bad architectural composition*. Take as an instance the Ruhmeshalle, near Munich; there the colossal statue stands in front of the centre line of a columned building, but that centre is a block with a horizontal cornice; the two pedimented facades come on either

side of the axis of the monument, not behind it. One can have a pediment in the centre and a monument on each flank of the facade (as was the case in some of the Roman temples), or one can have a pedimented wing on either side and a monument on the centre axis; but there cannot suitably be a central monument directly under the apex of the pediment; not, that is to say, where the monument forms practically part of the architecture, as is proposed in this case. We observe that in one of the papers the fact that Rodin's statue, "Le Penseur," is placed in front of the Panthéon, is quoted; but that is not a parallel case. The statue there is in no way connected with the building, it is only situated in the centre of an open space in front of it; which can be done there, because the slope of the ground is parallel with the axis of the building, which is not the case with St. George's Hall. And even there the group is not a lofty one. If it had been, it would not have been placed centrally in front of a pedimented building; the French understand these matters far too well for that.

It is a matter of regret to us to appear in opposition to Mr. Norman Shaw, to whom English architecture owes so much, and who, for reasons that we cannot understand, has given his support to this unfortunate scheme; but in this case we think he is wrong; and the question is one not to be settled either by personal considerations or by appeals on either side to those who are supposed to be authorities. There are no "authorities" on questions of art; they are to be settled by reason. Our opinion is that if the Liverpool Corporation carry out this proposed scheme they will put their Edward the Seventh Memorial in a situation quite unsuitable in regard to its meaning and significance, and will do a serious injury to the monumental aspect of their greatest building.



(1) Elmes's original proposal: access from street to south entrance obtained through corridor (under platform) leading to concealed steps which ascended to the rear of the portico. (2) Subsequent project of external flights of steps. (3) Final and existing arrangement: unbroken basis serving simply as pedestal to the great portico.

ROUGH SKETCH PLANS OF THE SOUTH PORTICO OF ST. GEORGE'S HALL, LIVERPOOL.

ARCHITECTS' RESPONSIBILITY FOR DRY ROT.

As briefly announced in last week's Journal, Mr. Justice Channell, on January 25th, gave judgment in favour of the plaintiffs in the action brought by the Leicester Board of Guardians against Mr. John E. Trollope, architect. It appeared that in February, 1908, it was found that dry rot had developed to a very serious extent under the floor of the North Evington Infirmary, which building had been completed about two years before under the architectural supervision of the defendant.

Mr. Hugo Young, K.C., representing the plaintiffs, stated, in the course of his opening address, that the renewal of the affected flooring had cost about £2,000, and that "the plaintiffs claimed first of all for negligence in supervision; secondly for negligence in giving a final certificate which exempted the contractors. They also claimed for breach of agreement to do the work of repair. There was a counter-claim by defendant against the plaintiffs for not appointing a fit clerk of the works; to which the reply was that the clerk of works appointed had the approval of the architect, and the defendant had himself in a letter acknowledged that the clerk of works had been most zealous in bringing defects to his notice.

The chief witness for the plaintiffs was Alderman Sawday, F.R.I.B.A., who stated that he had been in practice in Leicester for thirty years, and had been called in to report upon the North Evington Infirmary. He had found that dry rot was spreading practically throughout the building. The extent of the flooring was a little less than an acre. He had found from 8,000 to 9,000 pegs. In his view, the presence of the pegs was the cause of the dry rot. There were indications that the joists were fixed on the pegs, and that the concrete was thrown in afterwards.

Mr. Pollock, K.C., addressing the Court for the defence, submitted that the defendant was not liable. It was not to be disputed that certain details were not carried out in accordance with the specification; but if the architect were to spend his time constantly upon the work to see that every feature was dealt with according to the original plans, he would have no time to perform other extremely important duties. He contended that the offer made by Mr. Trollope to complete the work was never intended to form the basis of a legal liability which could be sued upon. If the guardians had intended to make a contract, they would have used their seal.

His lordship here interjected that he was not convinced that this was not an agreement, although there was some doubt on the point about the seal.

Mr. John E. Trollope stated in evidence that during the time the floors were being laid at the North Evington Infirmary, either he or Mr. Gough visited the work alternately once a month. He never saw any sticks or pegs, and if any quantity had been put in, he would have had to ask what they were for. The clerk of the works saw him at the works and in London from time to time, and submitted a number of matters to him which arose in the course of the building. The question of deviation in the construction of the floors was never mentioned in any document or minute. Under cross-examination, defendant said that while the work

on the North Evington Infirmary was being carried out he was also engaged on other works, near Manchester. The laying of the floors in the way provided—the 6 ins. of concrete in two layers—was, he assented, an important clause for protecting the building. A quantity surveyor visited the works once a month, but witness did not admit that it was a part of the duty of the quantity surveyor to test whether the concrete was 6 ins. thick. In the course of this cross-examination, the following interesting passages occurred:

—Q.—Do I understand that the clerk of the works is king of the job, and that everything he says has to be taken as conclusive? A.—Not at all. He is there to see that our specifications are carried out. Q.—Is it not part of your duty to supervise the clerk of the works? A.—General supervision. Q.—Is it not part of your duty, for instance, to see that proper timber is used? A.—Certainly. Q.—If he told you the timber was perfectly sound, was it not part of your duty to look round to see whether it was or not? A.—Yes, certainly. Q.—If he tells you that the concrete has been properly laid is it any part of your duty to see if he is truthful about that? A.—No. Q.—What is the difference? A.—The difference is that the concrete is put in the proper depth. Q.—Is he not there to see that timber is put in properly? A.—Yes. Q.—What is the difference? A.—One is a compound material, and the other is timber and natural. Q.—Did you at any time, when you went down, examine the least bit of this acre of flooring to see whether it had been laid on your principles? A.—No, not especially. Q.—Or at all? A.—I don't think so. Q.—Did you make any surprise visits or give notice of your arrival? A.—I think I made two or three surprise visits. Q.—Do you really suggest that in laying concrete floors where dryness is essential it is not a duty of the architect to take means personally to see if his designs are being properly adopted? A.—With a proper clerk of the works, certainly not. Q.—Wasn't it your duty to see your principle was carried out? A.—No, I don't think so. Q.—Did it ever occur to you that the clerk of works might misunderstand what you wanted? A.—No, he couldn't misunderstand from the drawings and description. —The £5,000 paid defendant's firm in fees was not large for so large a work. He thought that about 700 drawings had been made. Re-examined, he asserted that, supposing there had been a desire to conceal from him the way in which the work was being carried out, there would have been no difficulty in deceiving him.

Mr. E. T. Hall, F.R.I.B.A., gave evidence to the effect that it was the duty of a clerk of works to see that details were properly carried out.

Mr. C. Fitz-Roy Doll, F.R.I.B.A., F.S.I., architect and surveyor, who said that he had had forty years' experience in his profession, stated that he went to the North Evington Infirmary on November 14th, 1910, and examined the work. The fact that pegs were used did not indicate that the work was being done wrongly. Pegs had to be put in so as to get the level. In answer to Mr. Hugo Young's suggestion, "The architect in this case, apart from other questions, has certified for the buildings for £400 more than he ought to have certified for," witness replied, "The builder has obtained £400 more." Q.—By the certificate of the architect? A.—It has been put in the certificate of the architect, no doubt.

Mr. James Arthur Butler, who was a member of the Leicester Board of Guardians while the North Evington Infirmary was in course of erection, stated that the clerk of the works appeared, he believed, before several committees, simply in order to give any information that a committee might from time to time require, and it was not within witness's knowledge that the clerk of works had on any occasion been reprimanded.

Mr. Pollock, K.C., addressing the Court for the defence, contended that, since in one clause of the contract the clerk of the works was described as an inspector and assistant to the architect, and there was also provision made for what should be done in the absence of the architect, then it was quite clear that under the contract there was no intention that the architect should be constantly on the spot, but that very considerable duties were entrusted to the clerk of the works. In concluding his address, Mr. Pollock submitted that the architect could not be held liable for matters concealed from him by persons who were not appointed by him, and whom he had no power to discharge.

In delivering judgment, Mr. Justice Channell said that the plaintiffs had made no imputations upon the good faith of the defendant, and he was very much impressed with the candid way in which he had given his evidence. Defendant could have given evidence in his own favour much more strongly than he did, but he was an exceedingly candid witness. One was sorry to give judgment against him, but the facts were extremely clear. When the building was completed, it was discovered that all the timber in the lower part was badly affected by dry rot. Investigations were made, and it was discovered that the design—he dare say an ordinary design—intended to prevent the occurrence of dry rot had not been complied with. Somebody was undoubtedly to blame. The builder had to perform his contract, but had no authority from the architect to deviate from it. But there was a difficulty in the way of suing after the builder had got the architect's certificate of completion. Then the Board of Guardians, perhaps not unnaturally, said to the architects, "You ought to have seen to this, and we make a claim against you personally." A proposal was made that defendant, although he repudiated all liability, and wished for his own credit that nobody should have any complaint against him in a work of that kind, should make the matter good. Upon that the Board of Guardians omitted to take any proceedings they were threatening. He could not entertain the slightest doubt, subject only to the question of the seal, that that was an abiding agreement. The point put forward about the seal created some difficulty, and therefore with the possibility of the case going to the Court of Appeal, he thought he ought to decide that question. Plaintiffs' counsel had quoted cases which appeared to him to remove the difficulty. Proceeding to deal with the contention of the defence, that the fault lay with the clerk of the works, his Lordship said in one sense no doubt it was the fault of the clerk of the works. Whatever the duty of the defendant and his partner was, it was clearly the duty of the clerk of the works to call attention to what was going on, but did that relieve the defendant? He did not think there was any difficulty in saying what the respective functions and duties of architects and clerks of works were. He had a fairly



"THE CROFT," RUDDINGTON, NOTTS: GARDEN FRONT. H. TATHAM SUDBURY, ARCHITECT.

clear idea himself, and the witnesses who had been called practically agreed that in all matters of detail the clerk of the works had to see to it. Everybody knew the architect could not be on works all the time; and everybody knew that the clerk of works was appointed to protect the interests of the employer against the builder. It was said that the clerk of works was a servant of the plaintiffs, and therefore the defendant was excluded. If a party to a contract prevented the other party from performing his contract, of course that was an answer. An employer was not responsible for the fraud of a servant if the servant did it in his own interest, and not in the interest of his employer. On the main question he must hold the defendant responsible. He was sorry it was so, because it was a serious liability, and defendant had behaved extremely well. He had no doubt that defendant honestly agreed to do the whole work, but, having found it more than he expected, he tried to back out of the agreement. That was merely succumbing to a temptation which was quite a natural one. He thought defendant was liable in this case, and must give judgment against him.

Mr. Young mentioned the question of the amount of damages, and it was decided that this should be agreed upon later.

The judgment was for the plaintiffs on the claim and counter-claim with costs.

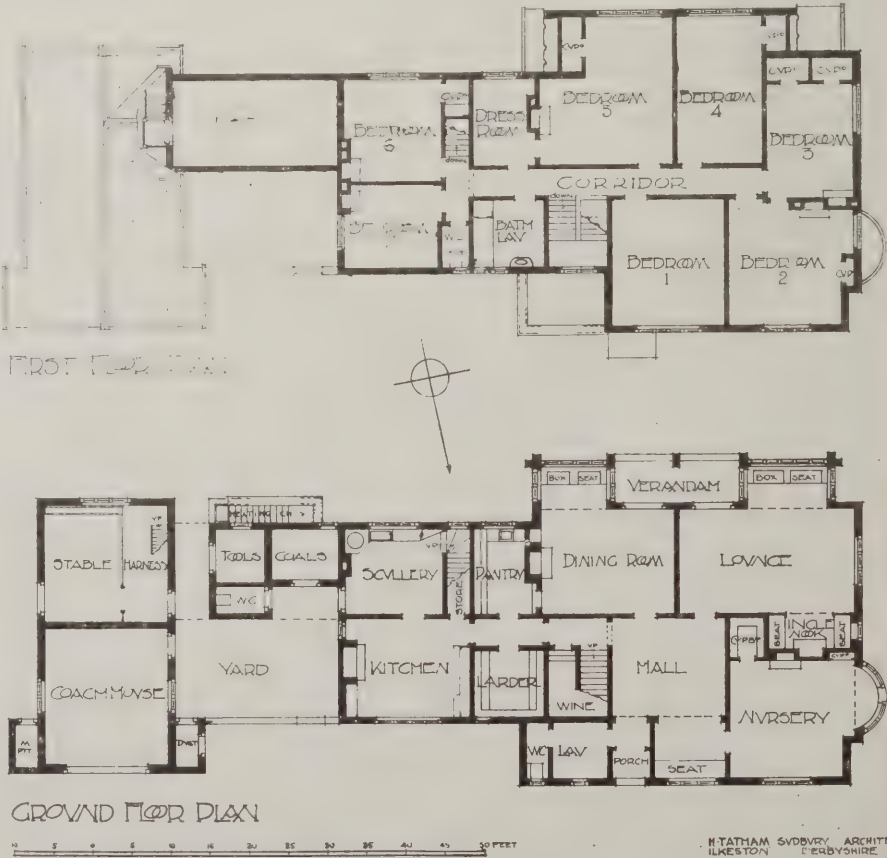
THE ANGLO-AMERICAN OIL BUILDING, WESTMINSTER.

We regret that, owing to a misapprehension when publishing the small view of the Anglo-American Oil Company's new building, Queen Anne's Gate, Westminster, in our Edition 'De Luxe' (December 31st, 1910), we ascribed the authorship of the design incorrectly. It should have been stated that the architect was Mr. Ernest Runtz, F.R.I.B.A., F.S.I.

"THE CROFT," RUDDINGTON.

This house occupies a fine site of several acres, with a small spinney in one corner of the site, through which the carriage drive has been formed. The house is built of common brick, covered outside with rough-cast stucco, whitewashed, and having a black brick plinth. The roof is covered with dark red hand-made tiles. The lounge has a polished oak floor, and the walls of the room are panelled in dark

oak. The dining-room, nursery, and hall are finished with canary wood; stained and wax-polished. The house is heated throughout with low pressure hot water. The general contractors were Messrs. Donnelly and Sons, of Kimberley, Notts. The garden has been laid out to the instructions and under the superintendence of the architect (Mr. H. Tatham Sudbury, of Ilkeston) by Messrs. W. Barron and Son, Ltd., Landscape Gardeners, Borrowash, Derby.



"THE CROFT" RUDDINGTON.

H. TATHAM SUDBURY, ARCHITECT
ILKESTON DERBYSHIRE

ARCHITECT'S CLAIM AGAINST A CORPORATION.

SEWARD V. CARDIFF CORPORATION.

On December 12th, in the High Court of Justice, before the Official Referee, Mr. Muir Mackenzie, Mr. Edwin Seward, F.R.I.B.A., architect and surveyor, practising at Cardiff, sought to recover from Cardiff Corporation the sum of about £9,000 for the preparation of plans for a free library and Welsh National Museum at Cardiff, and as damages for alleged breach of contract. The corporation contended that they had power to discontinue the undertaking, and that they were only liable to pay plaintiff remuneration valued by the work he had done. They estimated that value at £1,500, which sum they paid into Court. Counsel for the plaintiff were Mr. E. M. Pollock, K.C., Mr. Rowland Vaughan Williams, and Mr. Herbert. For the defendants the counsel were Mr. B. Francis Williams, K.C., Mr. John Sankey, K.C., and Mr. St. John Francis Williams.

Mr. E. M. Pollock, in opening the case, stated that in June, 1890, Mr. Seward was consulted as to the preparation of plans for a library for Cardiff Corporation. Afterwards the project was extended, and it was proposed to add a museum. The site first suggested was in Working Street, but in 1894 or 1895 a site in Park Place was under consideration, and, of course, the different sites required different plans. Towards 1900 a larger site was secured in Cathays Park, and a much larger scheme was contemplated. The Working Street scheme was to cost £20,000 to £25,000, and by 1902 the ultimate expenditure suggested was £150,000 or £160,000. Under an agreement with the defendants plaintiff was induced to enter into the preparation of plans for this scheme, and in 1904 the scheme was still further expanded, to include the erection in Cathays Park of a National Museum for Wales. In the brochure and advertisements for the promotion of this scheme, Mr. Seward's elevation and plans were reproduced. In 1907 defendants were empowered by Act of Parliament to hand over the museum scheme to a body incorporated under Royal Charter, who were entitled to receive the documents relating to the proposed museum. A great deal of work had been done by Mr. Seward in connection with the various schemes, and he had been deprived of his "clear and profitable employment" by the handing over of the powers to another body. When the Bill was introduced into Parliament, Mr. Seward felt bound to oppose it; and in the Act which was passed in 1909 a clause was inserted to the effect that the corporation should discharge their obligations and indemnify the other body against liability. There were thus three periods claimed for—(1) Till 1895; (2) to 1901; and (3) the period since 1901. As regards the first period, the Corporation pleaded the Statute of Limitations, and also that there was no contract under seal. Counsel was afraid that the statute plea must succeed; but he relied upon the agreement of 1901. He contended that the plaintiff was entitled to recover for the work he had done and for the work which he had a perfect right to anticipate doing.

Mr. Edwin Seward, F.R.I.B.A., the plaintiff in the case, was then examined. He stated that he had practised in Cardiff for thirty-four years, and had undertaken many important buildings in that city and

elsewhere. He detailed the circumstances in which he had made plans and done other work in connection with the schemes, explaining that the third set, for the Cathays Park building, were submitted after frequent discussions, and after many alterations had been suggested and made.

Asked, in cross-examination, "Do you know that the Council tried all they could to get the new body to take you on as the architect?" Mr. Seward replied, "They could have done so before it was too late. They could have devised methods by which their undertaking could have been carried out in the future work." The hearing was then adjourned.

On the resumption, the cross-examination of Mr. Seward was continued. In reply to a question from the Official Referee, he said that, with regard to alternative schemes, the committee had their value from them in feeling their way. Asked to say what constituted his appointment as architect to a building scheme of £150,000 to £160,000, he referred counsel to the agreement of December 21, 1901, and said that the paragraph he relied on was what might be called the preamble to that agreement, and he considered that under that he was to be the architect for the building. He relied upon the general attitude of the members towards him, as well as on the agreement.

Mr. Edwin T. Hall, F.R.I.B.A., gave evidence to the effect that he had inspected Mr. Seward's plans for Cathays Park Museum, which he considered to be adequate and comprehensive, each bearing relationship to the others, and he considered the charges were fair and reasonable and according to custom. Mr. Henry Vaughan Lanchester, F.R.I.B.A., and Mr. Max Clarke, F.R.I.B.A., also expressed the opinion that plaintiff's charges were fair and reasonable.

Mr. T. M. Deacon, quantity surveyor, said that the total cubical contents of the whole of the buildings in the final scheme came out at 3,064,594 ft., and the probable cost worked out at £153,983. This closed the plaintiff's case.

For the defendants, Mr. John Ward, F.S.A., curator of the Welsh National Museum, denied that plaintiff was ever instructed to prepare the £24,000 scheme for Park Place. He said that Mr. Seward was formally appointed architect on May 14th, 1895, subject to his withdrawing his claims for work done in regard to the Working Street site. With regard to the Park Place Museum, there was only one scheme, which was from time to time modified and developed. Mr. Ward contended that the index-hall, which was something quite new in this country, was his own suggestion, not Mr. Seward's. Witness was asked by the committee to render all the assistance in his power, and he must say that Mr. Seward had acted most loyally, and was always ready to discuss matters with him. The plans approved by the building committee on May 13th, 1902, were precisely the same as those approved in January and April of the same year. With regard to the new elevations which were drawn up near the end of 1903, there was no instruction from the committee to prepare them. Though the general design had been definitely approved, there was a feeling among the hon. curators that they were not quite satisfied, and, as the plaintiff was aware of this, he was anxious to meet them: therefore he voluntarily drew fresh elevations. In his opinion, there was never more than one scheme for the Cathays Park Museum—first, tentative plans, then working plans, and lastly

working plans developed. He admitted that Mr. Seward must have given a good deal of time and study to the plans, which, as cross-examining counsel suggested to him, represented years of labour. He thought very highly of plaintiff's elevation, which had been framed.

Alderman Illtyd Thomas contended, under cross-examination, that the museum committee did the brain work and the thinking out, and the other part was to a great extent draughtsmanship.

Mr. William Woodward, F.R.I.B.A., thought that the scheme was that of Mr. Ward, that the drawings were more properly to be regarded as one set than as three sets, and that Mr. Seward was entitled to £750, or 2½ per cent. on the £30,000 scheme, with a further £100 for the preparation of half-inch details.

Mr. Arthur Harrison, F.R.I.B.A., having given evidence, the further hearing was adjourned until after the recess.

At the resumption, counsel on both sides were heard, and the Official Referee said he would take time to consider his decision.

Judgment was delivered by Mr. Muir Mackenzie, Official Referee, on Wednesday last, February 1st. The chief points in the judgment are as follows:—It is plain, having regard to the law which regulates contracts by a municipal corporation with an architect or surveyor, that the corporation were under no liability to pay the plaintiff for the work that he did in connection with the plans which he prepared for the Park Place site, inasmuch as there was no contract under seal, notwithstanding that they had the benefit of the work. The next question to determine is whether there is a breach of the contract. The corporation purported to determine the employment of the plaintiff by virtue of the power conferred by Clause 10 of the contract, and the corporation maintained that there was no breach of the contract. I decide the contrary. It is, I think, to be inferred from the judgment of Lord Bramwell in *Hunt v. Wimbledon Local Board* that if a municipal corporation, having made a valid contract under seal to employ a person as architect for certain buildings, say to him, "We will not go on with the buildings or employ you any more," the corporation commits a breach of contract, for which an action for damages can be maintained. That is what the Cardiff Corporation did in the present case. The Building Committee having approved plans which had been made, and appointed a sub-committee to confer as to specifications and contracts, the corporation first postponed the matter, and finally abandoned it, and transferred the assets of the undertaking to another body. Clause 10 of the contract does not apply to what the corporation did. It clearly applies, in my view, to an event which never took place—viz., the commencement of works under building contracts pursuant to plans completed and approved, and a power in the corporation to stop those works. It follows from this decision that, in the first place, the defendant corporation was not entitled to discharge the plaintiff from his employment in the way in which he was discharged, and consequently that the way of assessing the plaintiff's remuneration for the work already done, for which Clause 10 provided, does not apply. There having been a contract made and a breach of it, the next question is what compensation the plaintiff is entitled to. I have had a certain amount of evidence on both sides as to what in the events which have happened

would have been the remuneration payable to the plaintiff under the scale of remuneration adopted by the Institute of British Architects, so far as that scale applies. Judges in directing juries have repeatedly declined to be bound to award remuneration or compensation on the basis of this scale unless that rate of remuneration has been expressly assented to, or it has been established that the owner has known that in employing the architect he would be charged in accordance with the scale. The plaintiff alleges that the museum building which he was employed to design and carry out was to be a building to cost about £150,000, on which sum he would have received 5 per cent., and also his fee for preparing bills of quantities. I find it clear that the corporation never employed the plaintiff to prepare plans for museum buildings to cost £150,000, or anything exceeding £25,000. The corporation's available resources limited them to that expenditure. I am bound further, in considering the compensation to which the plaintiff is entitled, to have regard to the circumstance that if the corporation had proceeded either with the plans approved by the building committee or more extended plans, and had had contracts prepared and works commenced, they could have stopped the whole or any part of the work under Clause 10, in which event the plaintiff's right to remuneration at 5 per cent. would have gone, and he would have received remuneration at the reduced scale mentioned in that clause. Evidence has been given before me that in assessing remuneration for what the plaintiff has actually done for the corporation I ought to treat the plaintiff as having been employed practically to design three different schemes and award remuneration in respect of each of them on the ground that the alterations from time to time directed involved practically the making of three schemes. This evidence has been met by evidence on behalf of the corporation that there was but one scheme, that of Mr. Ward, and what the plaintiff did was to prepare the architectural developments of that part of Mr. Ward's scheme on which the corporation decided to embark, with the consequence that the plaintiff ought to be paid a percentage on the cost of that part of the scheme. Of course, an architect must have a proper compensation for his time, and if there were involved a large degree of architectural knowledge properly so called it must be paid for according to the merits of the individual. But the genus architect was not necessarily entitled to 5 per cent., nor to 2½ per cent., and this Court has already had reason to know that architects were sometimes very formidable persons. As far as remuneration by percentages goes, the view I adopt is that it does not in the circumstances apply either in favour of the plaintiff or the defendants. Dealing next with the prospective remuneration to which the plaintiff might have been entitled, I cannot award him compensation on anything like the scale which he claimed in this action. On the other hand, it is my duty to have regard to the fact that the plaintiff was undoubtedly employed to do a large amount of work under the contract exceeding the amount of work which he would have had to do if employed to design a simple building to cost £25,000, and that £750, together with £100 for block plans, is too small a remuneration. I must also have regard to the usual scale upon which an architect of the plaintiff's professional eminence is

remunerated, and I come to the conclusion on the whole that the sum paid into Court—viz., £1,500—is an adequate and proper remuneration and compensation to the plaintiff in the circumstances of the case. As I have awarded to the plaintiff a sum in excess of the amount tendered, and as the defendants deny all liability, I give judgment for the defendant corporation in the action, with the general costs of the action, but I award the plaintiff the costs of the issue as to liability, and I will put the judgment into proper technical words to give effect to this decision.

COMPETITIONS.

Lay-out of Marine Estate, Douglas.

Professor Adshead's award in the competition for laying out the Villa Marine Estate, situated in the centre of the Douglas sea front (which was acquired by the Council a short time ago at a cost of £60,800) is as follows:—1, Messrs. Percy Robinson and W. Alban Jones, Leeds; 2, Mr. Stanley Ramsey, Herne Bay; 3, Messrs. John Casker and Harold Hill, Altrincham.

The New Town Hall for Marylebone.

At the last meeting of the Marylebone Borough Council it was decided to appoint a committee of nine members to deal with the question of a new town hall which is proposed to be erected. Councillor Fettes said that, as regards the assessor, his province would be to act as a sort of consulting adviser to the General Purposes Committee. They should advertise for a man who was a member of the Institute of Architects. They would be asked to draw up a scheme for the erection of the town hall and the Committee should go through the schemes and see which one they would accept. The Committee would then appoint an architect to bring up three or four schemes and the Council would have to decide which one they should adopt. The selection of the particular scheme, selection of the architect to carry the scheme through, and the selection of the contractor and builder, would be left to the Council.

The Soane Medallion.

At last week's meeting of the Royal Institute of British Architects the president announced that, the author of the drawings submitted under the motto "Civitas" having failed to comply with the conditions of the competition, and having retired from the competition, the Council have decided not to award the Soane Medallion this year. (The design was illustrated as the centre plate in our issue for January 25th.) Subject to the specified conditions, the Godwin Bursary (silver medal and £65) is to be awarded to Mr. Cecil Brewer.

LIST OF COMPETITIONS OPEN.

FEB. 15. JOINT ASYLUM, SWANSEA AND MERTHYR TYDFIL.—The visiting committee require an architect for the erection of a joint asylum to be situate at Cefn Coed, Cockett, near Swansea, to prepare designs, plans, specifications, etc., and to supervise the carrying out of the work. Applications, stating qualifications, experience, and terms, endorsed "Architect," to be sent on or before Wednesday, February 15, to W. H. Madge, Clerk, Guildhall, Swansea.

FEB. 25. COTTAGE HOSPITAL, ST. AUSTELL.—Architects practising in the County of Cornwall are invited to submit designs for a cottage hospital to be erected on the Trewoon Road, in the Town

of St. Austell. The estimated cost must not exceed £1,500. Three premiums, viz., £12 12s., £8 8s., and £5 5s., are offered for the three sets of plans which the committee may select, the premium of the finally selected architect to merge into commission. Designs to be sent to the Hon. Secretary, Mr. Henry Hodge, C.C., Trevarrick, St. Austell, by February 25th.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Premiums of £15 and £10 are offered. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee, E. Pearson, Corbridge.

MARCH 1. FREE LIBRARY, PENISTONE.—Competition limited to architects within thirty miles of Penistone.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 20.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Prof. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

SCOTTISH MEMORIAL TO KING EDWARD.

The Council of the Edinburgh Architectural Association have submitted to the Committee in charge of the Scottish memorial to King Edward resolutions to the following effect: (1) That the Council is gratified by the proposal to associate the memorial with Holyrood, with appropriate public access; (2) deprecates the proposal to erect a massive tower on the site of the ancient monastic gateway, as that would obscure the view; (3) considers that it would be unwise to remove the historic group of houses at the Abbey Strand; and (4) proposes that a select number of Scottish architects be asked to study the subject and submit designs for the general treatment of the project.

OBITUARY.

Mr. Henry Nicholas Hawks, I.S.O.

By the death of Mr. Henry Nicholas Hawks, I.S.O., which took place on January 30th, His Majesty's Office of Works has sustained a severe loss. Mr. Hawks entered the service of the Department in 1877, and was attached to the Scottish branch of the office in Edinburgh. After serving as architect and surveyor in Edinburgh for some years, during which time he was identified with the erection of many important buildings in Scotland, he was promoted to be architect and surveyor in charge of public buildings generally in the provinces. During this period of his service he designed and supervised the erection of the following buildings, amongst many others:—Custom House, Post Office, and Inland Revenue Office, Southampton; County Courts at Croydon, Swansea, Cardiff; Royal Naval College, Osborne. In 1907 he was placed in charge of the royal palaces, and most of the public buildings in London, with the exception of post offices, etc.; and whilst holding this post he was responsible for the erection of the new melting house at the Royal Mint, the Patent Office extension, and many large works of alteration and improvement to the Tower of London, and many other buildings of national and historical importance. But the most notable works entrusted to him during this period have been the extension and fireproofing of the National Gallery, and the erection of new offices for the Board of Agriculture. Unhappily in neither case has he lived to see the successful issue of his labours. The National Gallery works will not only provide much-needed additional galleries for the more effective display of the present collection of pictures and for the inclusion of further acquisitions, but the fireproofing of the previously existing galleries will ensure the adequate protection for all time of the national works of art from the risk of destruction by fire. The Board of Agriculture will, on completion, be one of the finest Government buildings in London. Its construction—a very intricate one, owing to the difficulties to be dealt with in connection with the foundations—presented problems which were happily solved by Mr. Hawks. In recognition of his services in designing and supervising the building of the Royal Naval College at Osborne, which in point of rapidity of construction was a remarkable feat, and in preparing the residence of the late Queen Victoria at Osborne for use as a convalescent home for officers of the navy and army, his late Majesty King Edward VII. appointed Mr. Hawks a companion of the Imperial Service Order.

R.I.B.A. Members.

At the meeting of the Royal Institute of British Architects on Monday, January 30th, the Hon. Secretary announced with regret the decease of the following members: Andrew Murray (A. 1872, F. 1899); Alexander Cunningham Forrester (F. 1904); Edward Skinner, of Ceylon (A. 1893, F. 1909).

The Late Mr. Colin Grant Patrick.

The late Mr. Colin Grant Patrick, of the old-established firm of Mark Patrick and Son, builders, of Westminster Bridge Road, who died on November 30th last, left estate to the value of £135,165 gross, with net personalty £127,408. Mr. Patrick had been in failing health for the past two years, and retired from business in

June last. The firm has been in business at Westminster Bridge Road for over eighty years, and previous to that in Belvedere Road, and has carried out much important work. Mr. Patrick was connected with many building enterprises, both in the City and West End. Since the retirement of Mr. Patrick the business has been carried on by Mr. W. S. Barton (for many years manager to Messrs. Mark Patrick and Son) under the style of Messrs. W. S. Barton and Co., and the offices have been transferred to 43, Chancery Lane, W.C.

Mr. Everett.

Mr. Everett, of the firm of H. Everett and Son, builders, Colchester, died on January 22nd, aged 56.

LEAD PAINT POISONING.

DEPARTMENTAL COMMITTEES APPOINTED.

The Home Secretary has appointed two departmental committees to investigate the danger attendant on the use of lead paints and compounds to persons engaged in painting buildings and to persons engaged in painting carriages and coaches. The chairman of both committees is Sir Ernest Hatch, Bt.; and Sir Godfrey Baring, Bt., Lord Henry Bentinck, M.P., and Mr. E. L. Collis, Medical Inspector of Factories, are members of both committees.

The other members of the committee on the painting of buildings are—Mr. F. G. Rice, President of the London Master Builders' Association and Representative of the National Federation of Building Trade Employers; Mr. W. G. Sutherland, Secretary of the National Association of Master Painters and Decorators; Mr. Archibald Gardner, Secretary of the Scottish Society of House and Ship Painters; Mr. J. Parsonage, Secretary of the National Amalgamated Society of Operative House and Ship Painter and Decorators.

Communications may be addressed to the chairman at the Home Office.

ARCHITECT, CONTRACTOR, AND
SPECIALIST.

In the King's Bench Division, Mr. Justice Bucknill recently heard the case of Carmichael v. Stonwood Patent Fireproof Flooring Co. The plaintiff, a builder and contractor, sought to recover £63 odd, alleged to be due under an agreement of March, 1908. Plaintiff built a house for a Mr. Buckley, in Hampshire, and defendants had laid certain patent flooring which they had guaranteed for three years: the defendants agreeing to refund the money paid them for laying the flooring if the building owner was dissatisfied with it, unless the architect decided that any faults of which complaint might be made were beyond the control of the sub-contractors. Complaints were made, and the architect, Mr. Reginald Blomfield, decided that the faults were not due to causes beyond the defendants' control.—Mr. Raynor Goddard, who appeared for the plaintiff, contended that the architect's decision was not an arbitrator's award, and that there had been no arbitration within the meaning of the Arbitration Act of 1889.—Mr. T. E. Forster, on behalf of the defendants, urged that there had been an arbitration, but that the decision should be set aside because the defendants had not been allowed an opportunity of rectifying the alleged faults.—Mr. Justice Bucknill held that the question of whether the causes of dissatisfaction were or were not

beyond the control of the defendants was a dispute to be decided by the architect. The enquiry should have been conducted in a judicial manner, and a signed award should have been made. The flooring having been taken up, no proper arbitration could now be made, and judgment must therefore be given for defendants, with costs. A stay of execution was provisionally granted.

GEOMETRY IN BUILDING WORK.

At a meeting of the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held on January 20th, under the presidency of Mr. John Bowman, Mr. David Skinner delivered a lecture, entitled, "Geometry in Building Work." He condemned rule-of-thumb methods, and advocated a more liberal use and application of geometrical principles. He divided his remarks into two headings, (1) elementary, and (2), higher geometry, illustrating the second part very fully by means of cardboard models and blackboard sketches. The octagon ventilator was described at some length, and the process of determining same was clearly illustrated, as was also the method of getting the bevels on louvres in triangular frames. The lecturer also touched upon the application to cones, circles, windows with splayed heads and sills, and centering for domes.

A. DAVIDSON, Hon. Sec.

CEMENT FOR INDIA.

The chief engineer recently reported to the vice-chairman of the Calcutta Port Commissioners that next year, when the entrance works for the new docks would probably be commenced, large quantities of cement would be required, and that a specification was being drawn up so that makers other than those belonging to the Associated Cement Manufacturers could tender. The matter came before the Commissioners at their last meeting, when it was decided that, in accordance with the chief engineer's recommendation, the tender of Messrs. Balmer, Lawrie and Co. for Gillingham Red Hand brand at Rs6-9-3 per barrel should be accepted. It was further resolved to authorise the chief engineer to purchase for purposes of trial in actual working 300 barrels of the cement offered by Messrs. Jessop and Co., namely "Invicta" brand, manufactured by the West Kent Portland Cement Co., at Rs6-8-0 per barrel delivered; also 300 barrels of "Gladiator" brand cement from Messrs. Kittel and Co., 5, Fenchurch Street, E.C., at Rs6-9-0 per barrel. The "Gladiator" cement is manufactured in Germany and in accordance with the German standard specification for Portland cement.

RIGHTS OF LIGHT CASE.

In the High Court of Justice on Friday last, Mr. Justice Eve delivered judgment in the case of Neale v. Willis and Sons, Ltd. Defendants had re-erected their building 22ft. higher than the former building, and plaintiff, a dealer in works of art, contended that the increased height would diminish the light coming to his windows. His lordship concluded: "I think on the whole evidence the plaintiff has failed to establish an actionable nuisance, and accordingly I dismiss the action with costs."

ADDRESS TO R.I.B.A. STUDENTS.

At the meeting of the R.I.B.A. on January 30, Mr. Leonard Stokes, president, delivered the annual address to students, and the criticism of drawings submitted for the Institute prizes and studentships, 1910-11, was read by Prof. C. H. Reilly, M.A. Cantab. Extracts from the address are given below. The criticism of the drawings is held over till next week, owing to pressure on our space,

The President said that, in his opinion, a student alone can rouse a student. Of course, even the youngest of us may make mistakes, but such mistakes are simple little howlers, which often set one thinking, and not the dull and heavy article produced by a President well over fifty. For this reason, therefore, he had a proposal to make—that next year the student under thirty years of age who can write the best address to his fellow-students shall read it to them, and have into the bargain, say, twenty guineas for his trouble, “and if the Council does not see its way to vote the money, I will guarantee that he gets it somehow. For his subject—if he wills it—he can remodel the Royal Institute of British Architects, and play any tricks he likes with it, and all its works and pomps. Further, I should like to suggest that the judges in this competition be under thirty years also, if that is not going too far, but perhaps you will leave this matter also to the Council and to me.”

The Light Touch of Youth.

The light touch of youth, so full of promise, so full of vigour and vitality, is worth a great deal in all forms of art; in fact, without it what should be a thing of interest becomes an object to deplore, and what should be a thing of beauty is often very far from it. Cultivate youth then, keep it green as long as you can, and water it well from the springs of learning, for study you must, and study hard too, if ever you hope to make yourselves felt in your generation.

“I am aware that there are many modes of study, and the form that suits one may not do for another, but in one way or another you must put your young shoulders to the wheel. Do not, however, try to be too clever and artistic—with a capital A—for nothing is worse than apparent effort in design. The simple, direct, and restrained, even if it does not catch the eye of the assessor, will do you more good to have achieved than half a dozen flashy productions, even if they get you the same number of commissions. Do not be in too great a hurry with your work, or too anxious to get it, but go steady, and never put your name to anything that is not of your very best; also remember that it is often just as important to know what to leave out of a design as it is to know what to put in, and that the one thing of all others to be careful about is proportion. The study of light and shade—a good stock phrase—is recommended by the faculty, but we have in our country so little light, and so much shade, that this fact alone should make us ten times more careful with our proportions.”

“Think for Yourself.”

In his youth he never had a good grounding in those delicious rules which give the right proportions for making everything, and he was unorthodox enough not to be a great believer in this rule-ridden type of learning; he would rather trust to the eye and its power of judging each individual case, than to the efficiency of a rule which probably has been educed from quite a different set of circumstances; what looks right in one case would be quite out of place in another, and although a rule may be all very well “to take off from,” the sooner we get clear of it the better. Always provided—as the

lawyers say—that we have trained our eyes and our judgment to do their duty properly. So whatever you do, think for yourselves. I do not for a moment suggest that you should try and be “original”! Heaven forbid! But I do maintain that you should be always thoughtful, and very careful. Please do not think that I want you to disregard what has been done in the past, for ours is a traditional art, and we must draw largely on the past if we hope to do better in the future. We should, however, use past examples intelligently and not blindly, even when we design on academic lines.

Architecture is a difficult thing to teach, as in our days it is such a comprehensive matter, but a smattering of a great many subjects is of no real use to an architect, unless such smattering is in addition to a real solid grounding in the “three R’s” of our calling.

A Word to the Successful.

A word or two to the prize-winners. I would say to these—beware! Many a good man has won prizes before, and never been heard of since; and the fact of your having got a prize to-day is only one more reason why you should work hard again to-morrow. It shows that you may be a man of parts, but what do we learn from men of parts in other callings? In the world of sport, for example, does the man who wins his heat to-day go on the spree, or does he train all the harder for the final struggle? You probably know the answer much better than I do. Skill of various kinds requires very careful handling, and I do not think that architectural skill is any exception.

Another pitfall is that travelling students often make poor use of their opportunities when travelling, and either go to the wrong places or spend their time in studying the wrong subjects. To guard against this the Records Committee is prepared to advise students where to go and what to do before they start on their travels.

Consolation for the Unsuccessful.

A word of consolation to those who have not been placed. You, at any rate, have escaped the awful risks which stare the winners in the face, and if you have any grit in you you will take your licking lying down. The line which divides a winning design from a losing one is often a very fine one indeed, and the very fact of having competed, and the spirit in which the result is taken, is what does the real good, and not the mere winning of the prize. So there is hope for all, including even the winners—perhaps; for study and hard work will turn the students of to-day into the Institute of to-morrow. “Personally—though I do not hold myself up by any means as a model—I believe I have learned far more from my fellow students, and friends, than I ever did from my teachers and masters.”

Architecture and Craftsmanship.

“I do not think we hear quite so much of crafts and craftsmanship now as we used to, and probably for the reason that we have steadied down somewhat, and now recognise that architecture after all is itself quite enough of a craft to demand our whole attention. It is not necessary to be a bricklayer in order to grasp the

limitations and proper principles of brick design, but it is necessary to know the size and shape of a brick before we can get very far on the architectural high road, and yet I have known young men in my time—otherwise very capable assistants!—who could not tell me the size of a brick.” As we have to do with all trades it is obvious that general and intelligent observation, combined with reading and lectures, can be about the extent of our mastery of so many subjects. Drawing is our mode of expression in our type of craft, and we shall find it very useful to be able to draw accurately and intelligibly.

A student’s life is not altogether a bed of roses; but it can be a very happy one nevertheless if only he takes a keen intelligent interest in his work. Architecture is a great and honourable profession, and it should be upheld by a fine honourable set of men. Play the game, therefore, strictly and straightforwardly; shun anything which in your own phraseology you would term “not cricket,” whether in connection with your work or your desire to get it. An architect has a number of great and ever-increasing responsibilities, and his client has to place implicit trust in him, and this trust should never be abused in the very smallest degree; for although it may be a fine thing to be a great architect and produce a quantity of really fine work, yet who after all is more respected and admired by all than the simple, honest, straightforward and upright English gentleman?

R.I.B.A. Gold Medallist.

It was announced that the Council propose to submit to His Majesty the name of Dr. Wm. Dörpfeld, of Athens (hon. corresponding member) as the recipient of the gold medal, in recognition of the distinguished services rendered to architecture by his archaeological researches.

LEICESTER SOCIETY OF ARCHITECTS.

This society opened its winter session on January 21st, with an address from the president (Mr. W. M. Cowdell, F.R.I.B.A.), and a musical evening in the society’s rooms, St. Martin’s East.

The President, in the course of his address, said that one of the objects of the society was “to maintain an acknowledged code of professional charges and prices.” Whilst far from suggesting that there was not ample ground for further progress, he thought those who cared to look back 25 years or so could not fail to recognise a very considerable advance in this respect. They had every reason to hope that the stand taken by the council of their society a year or two since, and the high standard of disinterested action taken by one or two of the most respected local members of their profession, though apparently unsuccessful at the time, could not fail in time to have a strong influence in the right direction, both with the general public and also in directing the conduct of any members of the profession who had overlooked the object of their society. Another object that had been kept well in view was watchfulness respecting competitions and other matters affecting the profession, and the endeavour to ensure equitable terms and awards.

A presentation was made to the retiring hon. secretary, Mr. W. K. Bedingfield.

The President, in handing Mr. Bedingfield a plaster portrait of his six-year-old daughter, which had been modelled by Mr. J. Crosland McClure, formerly of the Leicester Art School, referred to the excellent services Mr. Bedingfield had rendered the society during the past six years.

SECTIONS OF BEAMS OF GREATEST STRENGTH AND STIFFNESS.

BY H. SLICER, M.S.A.

The strength of a beam has been found to vary directly as the breadth, the square of the depth and inversely as the span.

For any given span the strength varies as the breadth and depth squared or as bd^2 , b =breadth, and d =depth.

There must therefore be some relation between these dimensions which will give to the beam maximum strength. This relationship is given in the text books as 5:7 (nearly), and the following shows the graphic proof of these figures. Let D be the diameter out of which a log is to be cut of maximum strength, and assume the diameter to be gins.

Then as the strength varies as bd^2

$$d^2 = D^2 - b^2 \quad \text{--- Euclid I. 47.}$$

$$\text{or } d = \sqrt{D^2 - b^2}$$

Call the value $bd^2 = y$

$$\text{then } y = bd^2 = b(D^2 - b^2).$$

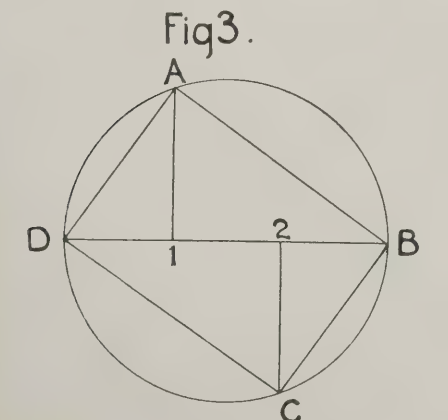
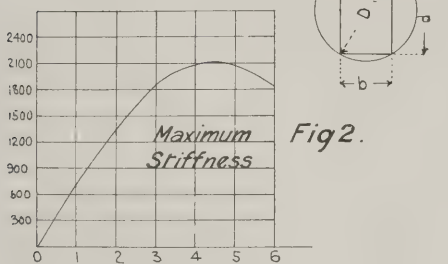
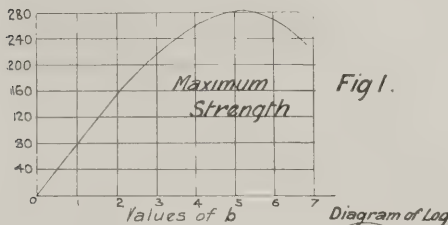
Substituting gin. for D , and taking various values for b , we can solve the equation for y .

The values are as follows:—

b	0	1	2	3	4	5	6	7
y	0	80	154	216	260	280	270	224

Plotting these values on squared paper, we get a curve which reaches a maximum between 5 and 6. (See fig. 1.) This shows that between 5in. and 6in. broad the beam has a maximum strength, to be more precise, say, at 5.2 inches.

The depth has yet to be calculated for corresponding to this breadth, and this can



be done by dividing y by b (5.2in.), and obtaining the sq. root of the result, thus:—

$$y = bd^2 = 280.58 \text{ nearly,}$$

$$\text{and } \frac{y}{b} = \frac{bd^2}{b} = \frac{280.58}{5.2}$$

$$\therefore d = \sqrt{\frac{280.58}{5.2}} = 7.348 \text{ inches.}$$

The ratio of b to d is therefore as 5.196:7.348, or, as stated, very nearly as 5 to 7.

Stiffest Beam.

The stiffness of a beam is proportional to the breadth and the cube of its depth.

Using the same letters as before, the depth is again equal to

$$\sqrt{D^2 - b^2}$$

y now equals bd^3

$$\text{and } bd^3 = b(\sqrt{D^2 - b^2})^3$$

and taking the sq. root out of the brackets

$$y = b(D^2 - b^2)^{\frac{3}{2}}$$

Taking various values for b , D being gin., we get the following relations:—

b	1	2	3	4	5	6
y	715	1351	1832	2096	2096	1810

The maximum stiffness is, therefore, when the beam has a breadth between 4in. and 5in.

Taking $4\frac{1}{2}$ " as the breadth b , $y = 2100 = bd^3$.

$$\therefore \frac{bd^3}{b} \text{ (to eliminate } b) = \frac{2100}{4\frac{1}{2}}$$

$$\text{and } D^3 = \frac{2100}{4\frac{1}{2}}$$

$$\therefore d = \sqrt[3]{\frac{2100}{4\frac{1}{2}}}$$

$$\text{The log of } 2100 = 3.3222$$

$$,, \quad 4.5 = .6532$$

$$2.6890$$

dividing by 3 to obtain cube root gives .8896, whose antilog = 7.756in.

The breadth of the log cut out of a gin. diameter pole of maximum stiffness is $4\frac{1}{2}$ in., and its depth 7 $\frac{3}{4}$ in.

The ratio of b to d is as 1:1.7.

Marking out ratios graphically on log ends.

The ratio can be readily marked out on the log ends in the following manner:—

To mark out strongest beam.

Draw a diameter, and divide it into three equal parts. Draw perpendiculars on alternate sides of the diameter from the points marked 1 and 2 (fig. 3), and where the perpendiculars and diameter meet the circle, join, as shown, to form rectangle ABCD.

Then by Euclid I. 47 $AD = \sqrt{(AI)^2 + (ID)^2}$

$$\text{also } AB = \sqrt{(DB)^2 - (AD)^2}$$

$$\text{By Euclid II. 14 } AI = \sqrt{DI \times BI}.$$

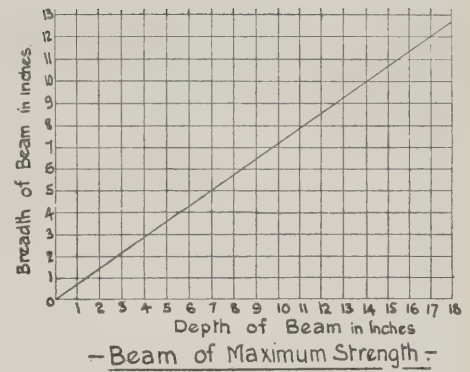
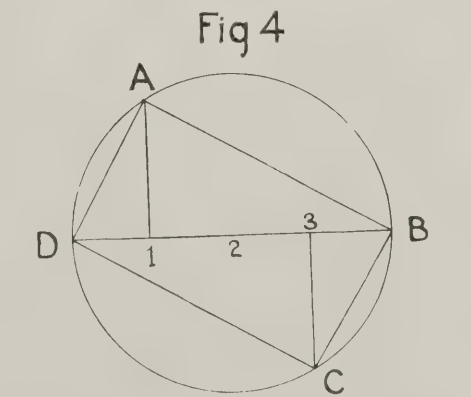


Fig. 5.

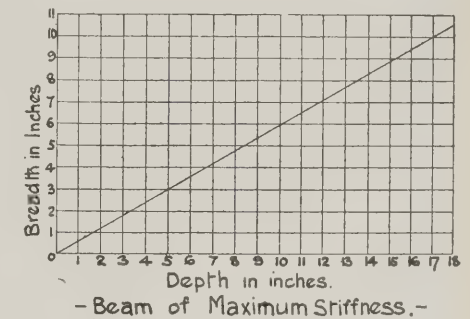


Fig. 6.

Let $BD = 1$, then

$$AI = \sqrt{DI \times BI} = \sqrt{\frac{1}{3} \times \frac{2}{3}} = \sqrt{\frac{2}{9}}$$

$$AD = \sqrt{(AI)^2 + (DI)^2} = \sqrt{\left(\frac{\sqrt{2}}{3}\right)^2 + \left(\frac{1}{3}\right)^2}$$

$$\sqrt{\frac{2}{9} + \frac{1}{9}} = \sqrt{\frac{3}{9}} = \frac{1}{3}$$

$$\text{Also } AB = \sqrt{(DB)^2 - (AD)^2}$$

$$= \sqrt{(1)^2 - \left(\frac{1}{3}\right)^2}$$

$$= \sqrt{1 - \frac{1}{9}} = \sqrt{\frac{8}{9}} = \frac{\sqrt{2}}{3}$$

$$\frac{AD}{AB} = \frac{\frac{1}{3}}{\frac{\sqrt{2}}{3}} = \frac{1}{\sqrt{2}} = \frac{1.0}{1.415}$$

or a ratio of 5 to 7.

To Mark out the Stiffest Beam.

Proceed as for the strongest beam, but divide the diameter into 4 equal parts. (Fig. 4.) Let $BD = 1$.

$$AI = \sqrt{DI \times BI} = \sqrt{\frac{1}{4} \times \frac{3}{4}} = \sqrt{\frac{3}{16}} = \frac{\sqrt{3}}{4}$$

$$AD = \sqrt{(AI)^2 + (DI)^2} = \sqrt{\left(\frac{\sqrt{3}}{4}\right)^2 + \left(\frac{1}{4}\right)^2}$$

$$= \sqrt{\frac{3}{16} + \frac{1}{16}} = \sqrt{\frac{4}{16}} = \frac{1}{2}$$

$$AB = \sqrt{(BD)^2 - (AD)^2} = \sqrt{(1)^2 - \left(\frac{1}{2}\right)^2}$$

$$= \sqrt{1 - \frac{1}{4}} = \sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{2} = .866.$$

The breadth is therefore $\frac{1}{2}D$, and the depth .866D, or the ratio is, as before stated, as 1:1.7.

By this means, any round log can be geometrically marked out for cutting up as required.

Diagrams 5 and 6 give the relative depths and breadths for maximum strength and stiffness, breadths being measured vertically, and depths to correspond being shown by the relative ordinates.

In works on mechanics it is shown that the horizontal shearing stress at any section is equal to the vertical shearing stress.

TRADE AND CRAFT.

Saxon Portland Cement.

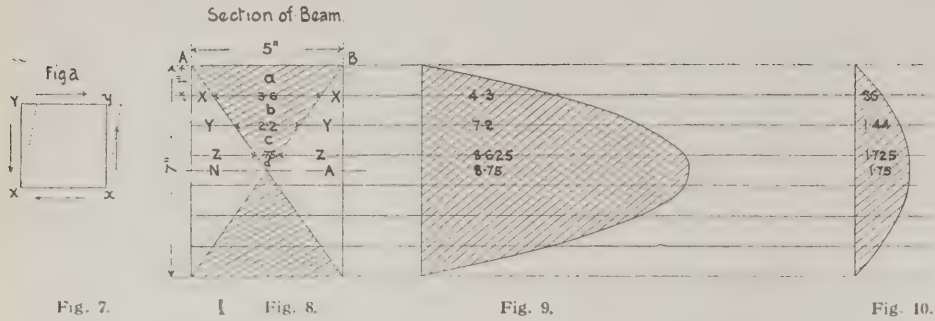
The modern process of cement manufacture, as exemplified at the Saxon factories, Cambridge, is tersely summarised in the handsome new booklet that has been issued by this firm, whose products, as is recalled in the frontispiece, which shows the handsome diploma of the Japan-British Exhibition, were there awarded a gold medal. A comparison of the British standard specification requirements with the guaranteed specification of Saxon cement shows the latter to be far superior in every detail. A series of "Saxon Don'ts" represent so many terse aphorisms, in which much excellent practical information is conveyed in the fewest possible words. There is an abbreviated, but still extensive list of important works for Government departments, corporations, councils, railway companies, and other public bodies, as well as for private contracts on which this brand of cement has been used; and many of these are illustrated by means of handsome half-tone engravings, which, like the rest of the booklet, are finely printed. Several of the elevations shown are of considerable architectural interest, representing, as they do, some of the most noteworthy modern work.

A One-lever Motor Winch.

Messrs. Smart and Brown, engineers, etc., Erith, Kent, have issued illustrated lists showing and describing (1) various sizes and several applications of the S. and B. motor winch, which is fully controlled by one lever, is entirely self-contained, occupies very little space, and may be had portable, semi-portable, or fixed; (2) the Simplicity single-cylinder motor, a paraffin electric set, a 4-in. by 4-in. two-cylinder engine, which has been recently improved, and an oil-engine and centrifugal pump; and (3) a special list of paraffin electric sets, which take up little space and can be easily and cheaply installed. Builders and contractors will find in these lists many items of practical interest, seeing that, in modern building, the power plant is becoming everywhere indispensable.

Radiators and Heating Specialities.

The National Radiator Company, Ltd., whose general offices are at 439 and 441, Oxford Street, W., have issued their 1911 catalogue, giving particulars of "Ideal" radiators, boilers, and heating specialities. It is to be noted that this catalogue supersedes all former lists, considerable reductions in many of the prices having been made. Special attention is drawn to the "Ideal" domestic boilers, which are now supplied (without extra charge) with flanged covers instead of plugs on all clean-cut openings larger than 2 ins. All boiler fittings are now charged at reduced prices, whether with a boiler or ordered separately. Several new patterns of valves are shown, the new valves requiring, as compared with the earlier models, only about one-half the number of turns to secure full opening, while improved construction secures a combination of neatness with maximum strength. The catalogue, which contains 230 pages (4½ ins. by 7½ ins.), includes a very useful section giving such data and tables as will enable the proper apportionment of heating surface and boiler capacity to meet varying conditions. Altogether a valuable catalogue, of which architects and engineers will be glad to avail themselves, and to whom the firm will send it on request.



The vertical shearing stress is a couple, and as no rotary movement takes place in a beam, it must be balanced or kept in equilibrium, which is only possible by means of two forces, as one force cannot balance a couple.

The vertical shearing couple YX and xy (fig. 7), acting as indicated by arrows, must be balanced by the horizontal shearing couple Yy, and xX. These horizontal forces must of necessity be of equal magnitude to the vertical forces.

The vertical shear at any section of a beam is easily obtained either graphically or mathematically; it only remains to find how it is distributed. The tensional and compressional stresses in a beam are greatest at the lower and upper fibres of the cross section, and are specially provided for in steel joists by placing most of the metal in these positions. The shearing stresses are provided for by making the web of sufficient thickness to resist them. The maximum horizontal shear acts where there is neither tensional nor compressional stress, i.e., at the neutral axis. It varies from naught at the top and bottom of a beam to a maximum at the neutral axis, the variation of stress falling within the outline of a parabola for rectangular sections.

Taking a rectangular beam 7in. deep and 5in. broad, divide it into layers, say seven, and draw diagonals which give the resistance figure, the fibres within the double triangle being considered to be uniformly stressed. The horizontal shearing stress at any horizontal section, say xx, fig. 8, is obtained by erecting an abscissa equal to the area contained between and outside of the beam.

Horizontal shearing stress at—

$$XX = \frac{AB + XX}{2} = \frac{5 + 3.6}{2} = 4.3$$

$$YY = \frac{5 + 2.2}{2} = 3.6$$

$$ZZ = \frac{5 + .75}{2} \times 3 = 8.625$$

$$NA = \frac{5 + 3.5}{2} = 8.75$$

See fig. 9.

The horizontal shearing stress at each layer is distributed over the area of such layer, and therefore the intensity of horizontal shearing at each layer equals the horizontal shearing stress at each layer divided by the area of the layer.

Intensity of horizontal shearing stress at—

$$XX = \frac{4.3}{5} = .86$$

$$YY = \frac{3.6}{5} = .72$$

$$ZZ = \frac{8.625}{5} = 1.725$$

$$NA = \frac{8.75}{5} = 1.75$$

This is shown by the parabola, fig. 10.

For a beam of rectangular section the maximum horizontal shear which acts at the neutral axis can be obtained as follows:—

If R = total shearing or resistance to shearing at any vertical section,
fs = maximum intensity of shearing stress at neutral axis,
d and b = depth and breadth of section respectively.

$$\text{Then } R = fsbd$$
$$\therefore fs = \frac{R}{bd}$$

As the area of a parabola equals two-thirds of enclosing rectangle, therefore at the neutral axis $fs = \frac{3}{2} \frac{R}{bd}$.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

Mr. J. J. Wood on "The Guild of the Comacine Masters."

At a general meeting, held at the Leeds Institute on January 26th, Mr. Sydney D. Kitson, F.R.I.B.A., presiding, Mr. J. J. Wood, A.R.I.B.A., of Leeds, read a paper on the "Guild of the Comacine Masters."

As the Guild was always in league with the Church, it was not surprising to find that the most characteristic examples of the work of the guild were of ecclesiastical character; wherever Christianity had penetrated, throughout the ruined Empire of Rome, there the Comacine Masters had left their mark on Church architecture.

Vast as was the spread of their influence—affecting such widely separated districts as Lombardy, Sicily, Servia, Germany, France, and Britain, yet the presence of one immense organisation offered the only explanation of the otherwise inexplicable similarity of contemporary architecture in such places.

For administrative purposes, the guild was divided into lodges, each lodge consisting of a school where the traditions of the various crafts were taught, the general workshop, and the administrative office which constituted the link between the guild and its patrons. Under a president or Grand Master, the Magistri or members of the governing body of the guild organised the various works, while the Liberi Muratori—freemasons—carried out the different branches of the work. From the coming of the Longobards to Northern Italy in the sixth century, the Guild flourished until the dawn of the Renaissance, when, probably owing to its own unwieldiness, it broke up.

The concluding portion of his paper Mr. Wood devoted to Comacine work in the British Isles—citing and illustrating such well-known examples of Saxon-Lombardic work as Earl's Barton Church, Chapels at Bradford-on-Avon and Durham, and parts of churches at Sompting and Monkwearmouth, where, in characteristic tower, round arch, or type of ornamentation, the work of the Comacine Guild was unmistakable, while he believed that in Ireland the round towers owed their character as certainly as did the richly ornamented crosses to the same origin.

DEPOSITING CONCRETE BY GRAVITY CHUTES.

For handling and distributing concrete and delivering it into place in the forms, various arrangements of wheelbarrows, tracks, cars, and elevators are used, while in some cases conveyors have been used. A method of an entirely different character is that of raising the concrete to an elevated point and then distributing it to the forms by inclined chutes, through which the concrete slides by gravity. This method has been employed on a number of works of varying character, and has been made a speciality by the Concrete Appliances Company, of St. Louis, Mo. While the method is used by other firms, this company has developed and patented special apparatus and appliances for the

surface. By this flexible piping system the concrete can be delivered close to or at a distance from the elevator tower, and it is stated that it can be delivered in this way to a distance of 500 feet. For long distances, the pipes may be suspended from overhead cables and supported by intermediate towers. The various arrangements mentioned are shown in the figure, but for each job they are modified or adapted to suit the plan of the site and other conditions.

Means are provided for conveniently raising the hopper and pipes as the work progresses. Four vertical timbers (A), fitted against the posts of the tower and connected by the upper and lower trolley track (B) and (C), form a skeleton mast. This carries the boom and its guys, so that the mast and boom form a complete unit which can be raised by block and

at the material bins, one at the mixer, one at the hoist, one at the cage at the top of the tower, and two men handling the end of the discharge pipe (for each additional pipe there will be two more men). It is said that with this force of seven men, from 35 to 40 cubic yards of concrete per hour can be mixed and deposited in place. It is stated further that ten men under this system can place nearly twice as much concrete per hour as 35 men working with wheelbarrows or carts. It is also claimed that the cost of delivering concrete in place by this method is not much more than half that of the usual methods.

It is to be noted also, that each batch of concrete can be deposited in place at one operation, instead of by separate wheelbarrow loads. The delays usually involved in such work by the wheelbarrow

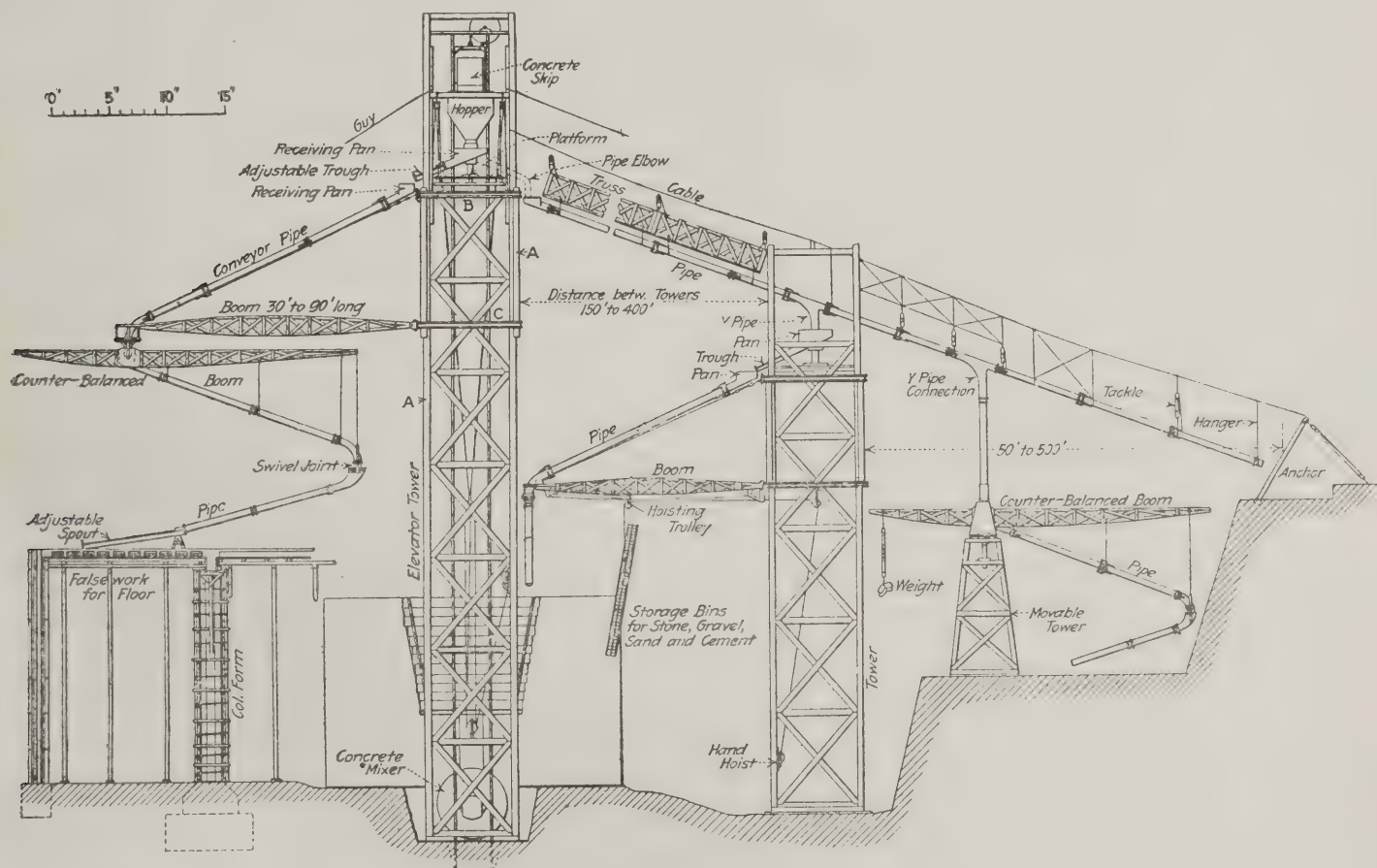


DIAGRAM OF PLANT FOR DISTRIBUTING CONCRETE BY GRAVITY PIPE CHUTES.

conveying and distributing of concrete by gravity.

A typical arrangement of the plant on this system is shown; but observe that the booms are now set at an incline, to reduce the thrust on the tower. The elevator tower (rectangular or triangular in plan) is erected on a convenient part of the site. The concrete from the mixer is delivered directly into the automatic dumping skip, and at the top of the tower it is discharged into a hopper. From the bottom gate of this hopper, it is discharged as required into a swivelling pan, and flows from this through a chute, or an elbow to receiving pans on the upper ends of the inclined conveyor pipes. These pipes are supported by booms, which also carry hoisting trolleys for handling the forms, etc. The pipe ends in a vertical drop sprout for filling column and wall forms, or it may have swivelling adjustable inclined spout for distributing the concrete over a wide area such as a floor

tackle as the height of the tower is increased. On some of the earlier work the boom step and guy were carried by trolleys, so that they could be moved to any side of the mast or tower. The moving was found to be inconvenient, however, and two booms are now fitted on opposite sides. The cage carrying the main hopper and receiving pan can also be raised by tackle. For buildings of small area, no booms are required.

There appears to be no trouble in the way of separation or segregation of the materials as the concrete slides down the pipe chutes. In fact, it is claimed that the churning motion in the pipes serves to agitate and mix the concrete during its travel; with this agitation and the speed of movement there is no opportunity for the concrete to be at rest and begin to set. Among the advantages claimed are rapidity of work and a reduction in the amount of labour required. The force for ordinary work will include two men

men waiting their turns at the mixer, the elevator, or the dumping point, are eliminated by this direct handling and distribution of the concrete. Other advantages are that large quantities can be handled quickly, the concrete in place is dense and homogeneous, the floor space is left unobstructed for the use of carpenters and other workmen, and damage to floors, etc., by wheeling over them, is avoided. The method is applicable to concrete and reinforced-concrete structures of all kinds.

In erecting a concrete building in Chicago, the Falkenau Construction Company used a main chute 10 by 18 ins., with auxiliary movable section in 13-ft. lengths. All these were open troughs, and the main chute extended from an elevator tower. The minimum and maximum angles of the chutes were about 8 degrees and 25 degrees respectively. So far from the travel of the concrete in the chutes having any tendency to cause segregation, it appeared rather to mix more thoroughly.

NEWS IN BRIEF.

Northern Architectural Association.

The presidential address delivered by Mr. H. C. Charlewood, F.R.I.B.A., before the members of this Association in November last has now been issued in pamphlet form.

Economical Reinforced Concrete Design.

In publishing the article under this heading in our last issue, we omitted to state that the author was Mr. G. A. Clark, by whom it was originally contributed to the Magazine of the Old Students' Association of the Finsbury Technical College.

Royal Institution Lectures on Architecture.

At the Royal Institution, Finsbury Circus, Mr. T. G. Jackson, R.A., will deliver three lectures on "Byzantine and Romanesque Architecture," on Saturdays, February 11th, 18th and 25th, at 3 p.m.

Moving Stairways on the District Railway.

At Earls Court Station the District Railway Company are having constructed moving stairways for conveying passengers between the District and the Piccadilly Railway stations. It is intended to put such moving staircases into various stations where they are required if the experiment at Earls Court is successful.

A Picture by Mr. Solomon.

To the series of frescoes representing scenes and incidents in English history which adorn the main corridors of the Houses of Parliament, is about to be added a picture by Mr. Solomon J. Solomon, R.A., representing Queen Elizabeth as the central figure supported by the entourage of the Court. It is a large work, 8 ft. 6 in. by 14 ft., and will occupy the large panel on the top landing of the grand staircase.

Some West-End Street Widening.

The Westminster City Council has prepared for submission to the Road Board under the Development Act, schemes for improvements which are estimated to cost £250,000. They comprise a general widening of Piccadilly from 79ft. (the present width) to 90ft. between the Ritz Hotel and Park Lane; the widening of Berkeley Street from 37ft. to 50ft., by moving the boundary wall of Devonshire House and Lansdowne House; and the widening of Argyll Place (between Regent Street and Great Marlborough Street) to 60 ft.

Town Planning Exhibition at Chelsea.

Under the direction of a Committee, of which Mr. Raymond Unwin and Professor Geddes are the moving spirits, a town planning exhibition has been arranged in Crosby Hall, Chelsea (nearest railway station Sloane Square), and is now open until February 25th from 2 to 6.45 p.m., and from 8 to 10 p.m.; admission 6d. The exhibits will subsequently be taken to Edinburgh, where they will be shown in the Royal Scottish Gallery at the Mound, the Town Council having agreed to bear the cost of £300 that will be incurred in doing so.

The Tomb of Queen Victoria.

About 5,000 persons visited the Royal Mausoleum at Frogmore on January 25th to see the sarcophagus in which the body of Queen Victoria has been placed. A number of alterations have been made in

the mausoleum, the designs of which were approved by King Edward. These include the decoration of the dome above the tomb of Queen Victoria with panels of angels, some of the figures holding Imperial crowns and others wreaths. The stained glass windows have also been completed. The designs are those of Mr. Ion Pace. At the approach to the mausoleum two lamps of Byzantine pattern have been erected.

"Marmo" Facing for City Buildings.

In Fulham Road, London, S.W., attention is at once arrested by the new building which has been erected for the Michelin Tyre Co., Ltd., from designs by Mr. J. Espinasse, architect, of Clermont-Ferrand; the facing being executed in Burmantoft's "Marmo" in several colours, with emblematic and heraldic panels, supplied by the Leeds Fireclay Co., Ltd. This new form of terra-cotta has a pleasing surface which successfully resists the action of the weather and—what is of special importance—can be periodically cleaned of all soot and dirt. It is thus especially suitable for city buildings.

A Relic of Mediæval Architecture.

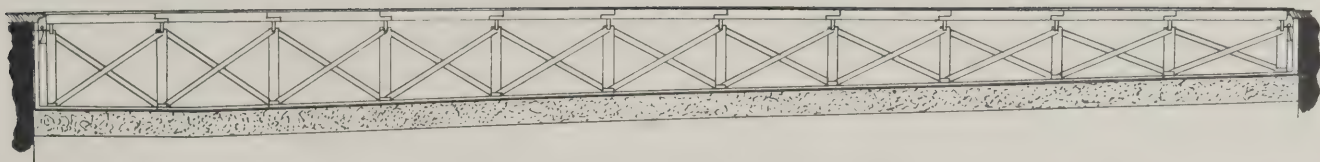
The National Trust for Places of Historic Interest or Natural Beauty (25, Victoria Street, London, S.W.) are appealing for funds for the acquisition of The Old Priest's House, Muchelney, Somerset, an almost untouched relic of mediæval architecture. The Society for the Protection of Ancient Buildings consider the preservation of the house to be a matter of such importance that they have undertaken to bear the cost of putting the building into repair if the property is acquired by the National Trust. In addition to the actual cost of purchase, a small sum will be needed to cover legal and other preliminary expenses, and the council accordingly appeal for £250. Donations may be sent to Mr. Nigel Bond, secretary of the Trust, at the above address.

A German Town Planning Tour.

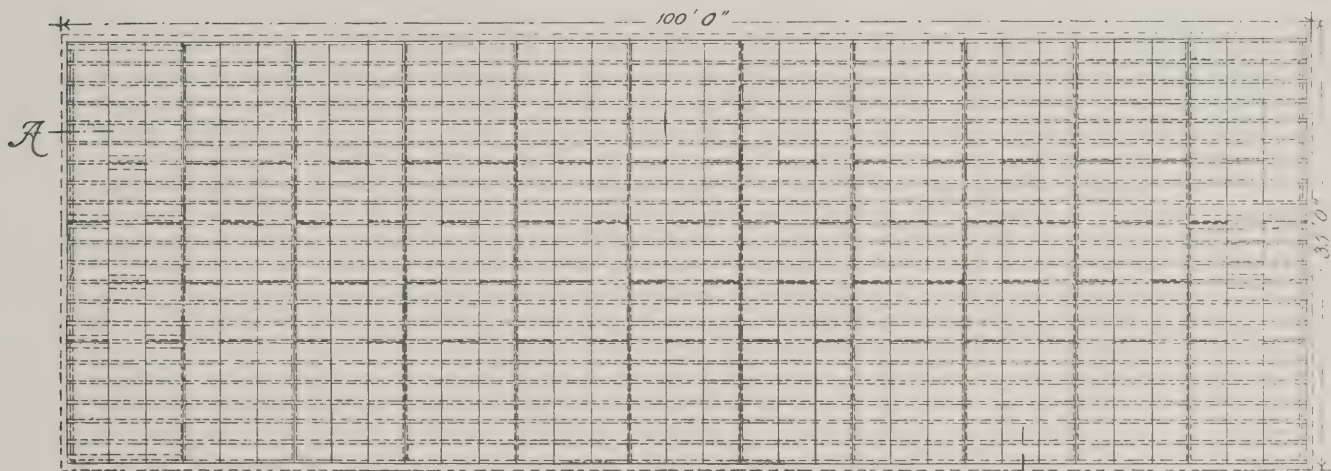
The Garden Cities and Town Planning Association have arranged for a town planning tour in Germany during the forthcoming Easter, starting on Thursday, April 13. The towns which it is hoped to visit include Essen, Cologne, Dusseldorf, Frankfurt, Mannheim, Heidelberg, Ulm, Nuremberg, Stuttgart, and Dresden, with excursions from these centres to industrial villages and other places of interest in the neighbourhood. The primary object of the tour being an effective study of town planning powers and possibilities, membership will be confined to those having direct interest in the subject, in its various aspects. Ladies will be welcomed among the party. In order to provide for both those who would wish to return early, and for those who would desire to make a more prolonged study, the tour will be divided into two parts, the first party returning from Frankfurt or Mannheim. The price for the first portion (nine days) will be eleven guineas, and the extension (a further five days) five guineas. This price will include second-class railway throughout and first-class steamer, hotel accommodation and meals, gratuities to servants, etc., and conveyances to the various towns visited. All applications and inquiries should be addressed to Mr. Ewart G. Culpin, secretary, Garden Cities and Town Planning Association, 31, Birkbeck Bank Chambers, Holborn, London, W.C.

GLOUCESTER ARCHITECTURAL
ASSOCIATION.

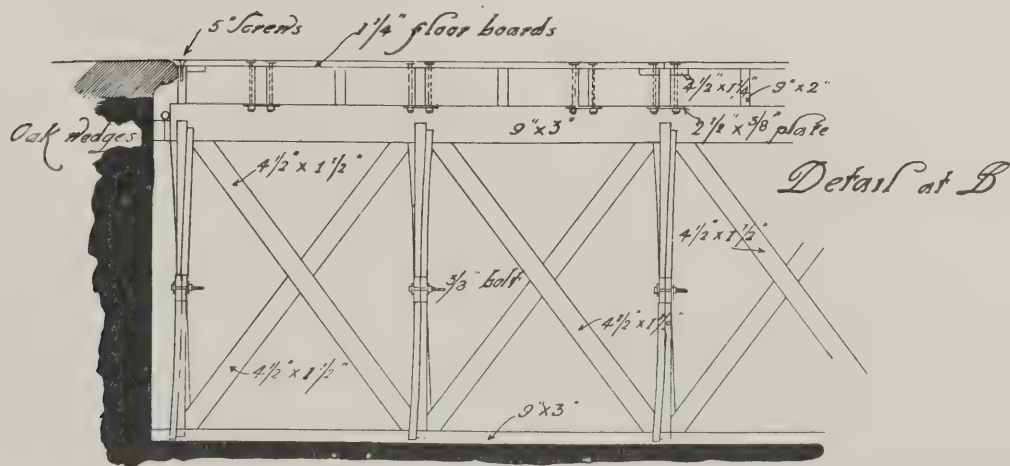
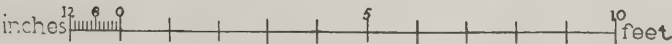
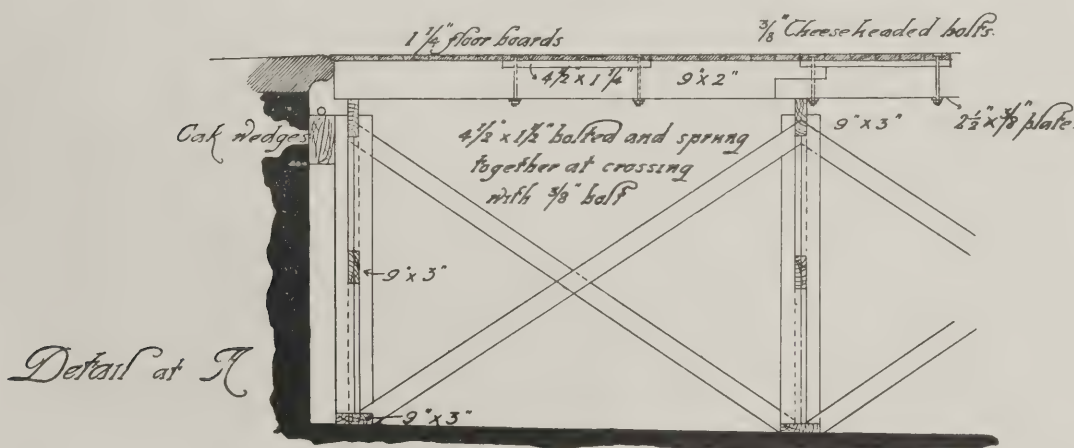
The fourth annual general meeting of the Gloucestershire Architectural Association was held on Thursday, January 26th, at the Northgate Mansions, Gloucester, Mr. H. W. Chatters in the chair. Mr. Walter B. Wood, of Gloucester, was elected President for the coming year, and Messrs. H. A. Jancey and T. Overbury Vice-Presidents; Messrs. W. F. Jones, S. H. Healing, and J. Fletcher Trew were elected Members of Council; Mr. H. W. Chatters was appointed hon. corresponding secretary for Cheltenham, Mr. G. P. Mines for Stroud; and Mr. Harold S. Davis hon. secretary and treasurer.



Longitudinal Section (Transverse Strutting omitted)



Plan. showing division of covering



It is common practice to utilise swimming baths for concerts, etc., in the winter, and for this purpose the area is floored over. There are several methods of forming such temporary floors, but the one here shown is the best. The construction is extremely light, and can be easily removed and re-erected. The drawing is self-explanatory.

TEMPORARY FLOOR OVER SWIMMING POND, PUBLIC BATHS, PITFIELD STREET, HOXTON, LONDON, N.
ALFRED W. S. CROSS, M.A., F.R.I.B.A., ARCHITECT.

BOOK NOTICES.

Complete Drawings of a House.

This book, which has been prepared for the instruction of students in obtaining "an intimate knowledge of all the drawings necessary for the erection of a building," is in small folio form, and consists of a complete series of figured working drawings for a tolerably large dwelling-house, accompanied by descriptive letter-press.

This is very completely done; the series commencing with a block plan of the site of the house and the laying out of the garden, going through the successive large-scale plans, the elevations, the decorative treatment of the principal rooms, and the constructional details of windows and doors, pilasters, panelling, etc. The constructional details are all very fully and completely given, and will be very useful to architectural students, though some of them are details of things which, if they are not actually old-fashioned now, ought to be so. We have, for example, sections of fluted pilasters in $1\frac{1}{2}$ in wood jointed at the angles and with large empty spaces behind them; and nearly all the windows are shown in detail with the hollow "boxing and casing" and hanging weights which ought to be obsolete now, when there are so many better ways of making windows. However, it may be answered, no doubt, that as long as these methods of decoration and construction are employed, students must know how to make them properly. On the other hand, $2\frac{1}{2}$ in. wooden balusters to a stair of which the steps are formed of marble slab treads and risers on a steel-concrete structure, strike us as an undesirable novelty; steps of that kind should either have had marble balusters or a forged metal ramp; the wooden balusters are quite out of keeping. In regard to the drawing-room, which is to be painted white and finished in "Adam style," it seems to us that to use mahogany or walnut wood for this painted work is to throw away woods which have a fine colour and figure of their own, which it is a pity to cover with paint.

The minute way in which the bathroom and sanitary and drainage fittings are detailed in the drawings is useful, and adds to the practical value of the book.

We presume that the plan of the house is not necessarily intended as a model plan, but only as a means of showing drawings; it should not be taken as a model in all points, at all events. To begin with, it repeats the mistake we so constantly see in house-planning, of giving the principal windows of the dining-room and drawing-room the same aspect—making the two rooms face the same way, which should always be avoided if possible; they are rooms used for different purposes and at different times of day, and require a different aspect. North-west is not the best aspect for the kitchen window, but the author has remembered to give a top-light over the kitchen range, otherwise the principal window would be quite in the wrong place. The door into the lavatory, from the entrance-hall, opens the wrong way, right on to the lavatory basin, which would be seen all across the hall; and the same with the w.c. door within the lavatory, which also ought to open with its back to the seat, the reverse way to that shown on the plan; it is odd how often little things of this kind are overlooked in planning. The author has made a good point, however,

in arranging the dining-room door and the staircase, hall, and corridor, so that as he says, a vista through the whole length of the house can be obtained.

In the bedroom plan it is absurd that while the smaller bedroom, on the right of the plan, has a dressing-room communicating with it, the largest and principal bedroom, on the left of the plan, should have no dressing room attached to it; for a first-class house this is not commendable planning, and we question whether the plan of placing all the beds facing the windows is desirable. In summer it is difficult to prevent early morning light from filtering through shutters and curtains, with the result of waking the sleeper unseasonably, if right in his face.

These points do not affect the practical usefulness of the book for the object for which it was intended, but students should be cautioned not to take the plan in itself as a model.

The Construction of a House: Being the study of Building Construction presented by means of a set of forty plans and detail drawings of a design for a country house. By Charles Gourlay, A.R.I.B.A. London; B. T. Batsford, 1910.

The English House.

There seems to be constant production at present of books on the home, on small houses, on bungalows, etc.; some of them sentimental, some of them in the nature of advertisements; few of them of much value. It is not easy to understand what is the object of the present one. It is of no use to architects, as it only deals in generalities such as are familiar to them, and the examples show a good many instances of poor planning, rather to be avoided than followed; and at the same time it is too professional to be attractive to the general reader—or so we should have thought; but the Duke of Argyll, who writes a complimentary preface, seems to think that it "may enable some of us to have more or less mature ideas of our requirements before we consult with our architects." That is hardly an idea that will be welcome to the architects. Generally speaking, no client is more troublesome than the one who comes primed with a little superficial knowledge out of a book, and on the strength of that wants to instruct his architect.

The short sketch of the history and development of the English house, in its main features, is adequately done, and the general directions as to the treatment of the various parts of the house, though they are somewhat commonplace, are what one can agree with. Hollow walls should not have been referred to and illustrated without mention of the fact that there are objections to their use at all, strongly held by many persons, and to our thinking, with reason. We are glad to see that the authors, in dealing with the subject of water supply, recognise how inadequate is the present notion of water-supply per head for towns. In mentioning 35 to 50 gallons per head per day, they are putting the case far too favourably; very few water engineers or water authorities would consent to consider the latter figure; many of them grudge the 35 gallons.

We agree with the authors that the most prevalent fault in modern architecture is the striving after picturesqueness for its own sake; but we do not know whether the striving after "the long and low effect which is so much admired in the old farm-

houses" is not a convention of rather the same kind; and the advice to make rooms "as low as you dare" is a fashion of the day, a reaction against the opposite fault, which will change again, like other fashions.

In the plans given as illustrations, we find a constant repetition of what we noticed in Mr. Gourlay's plan of a house, the idea that the dining-room and drawing-room should have the same aspect, and even be symmetrical repetition. In turning over the plans we notice a good many doubtful or more than doubtful points: e.g. (Fig. 186) a kitchen with a south light and the light on the right hand side of the range—the most inconvenient way to plan a kitchen; Fig. 197, dining-room, drawing-room, and kitchen, all with the same aspect—no north point is given, but the aspect must be wrong for one of them at all events; Fig. 193, a water-closet door at the end of the vista of a long passage; Figs. 293, 294, quite undesirable planning; Figs. 297, 298 (same architect), equally naive planning, and the kitchen range at the farthest point opposite the window, so that the cook stands in her (or his) own light; Fig. 310, dining-room all window on the south side, and kitchen with a large window looking west; Figs. 325, 326, planning like a simple attempt at dividing up a space into rooms.

The proportion in the authorship of the illustrative designs is rather striking; there in one house design by Mr. Lutyens, and there are sixteen by the authors.

The English Home. By B. F. Fletcher, F.R.I.B.A., and H. P. Fletcher, F.R.I.B.A. London; Methuen and Co. 12s.

"The Year's Art."

This is one of those reference books that we cannot do without. Now in its thirty-second year, the volume furnishes the essential particulars of all the art societies, schools, and other similar institutions throughout the Kingdom, with information about the national art collections, and, at the end, a directory of artists and art workers which is of the greatest use, as without "The Year's Art," one would be often at a loss to find such names and addresses; no other volume contains so complete a list. There are, also, the other regular features of the publication, the new edition including an epitome of events in the art world during the past year, and a chronicle of the most important art sales. Throughout the volume are interspersed five plates, these including three Corots and two Daubignys.

If there is any criticism we have to make, it is that the insertion of three pages of advertisements between the list of contents and the diary at the front is undesirable, as it makes it difficult to find the contents page, and, in the same way, the index is mixed up with the advertisements at the end of the book.

The Year's Art, 1911. Compiled by A. C. R. Carter. London: Hutchinson and Co., 34, Paternoster Row. Price 5s. nett.

Quantity Surveying.

The extreme cheapness of this manual may doubtless commend it to students; but the obvious disadvantages are seen in the small type into which it has been necessary to compress the information, and may perhaps be inferred with regard to the attractions the low price may have for persons who otherwise might not be tempted to dabble in a subject that is best left to the professional expert. The editor seems to have anticipated the latter ob-

jection, for he says in his foreword, "The professional quantity surveyor fills a recognised and useful place in the building world, but it is neither desirable nor necessary that the architect and builder should be continually dependent on his services." We cannot unreservedly subscribe to this specious plea; and when the editor, waxing momentarily bolder, goes on to say that, "A careful study of the notes and examples given in this little work would qualify any intelligent student to do his own quantity surveying," we feel impelled to enter our caveat. The author, however, seems to have done his work very well, and his booklet may possibly serve the quite legitimate purpose of helping young builders to a wider understanding of their own proper business.

Quantity Surveying. By George Metson, M.R.San.I., with numerous illustrations by the Author. 120 pages, 6d. John Dicks Press, 8, Temple Avenue, E.C.

Spons' Pocket Price-Book and Memoranda.

The value of a price-book that can be conveniently carried in the pocket has been so plainly established, that the compilers of Messrs. Spons' Price Book, when they found that the continual increment of matter was likely to make it unduly bulky for this purpose, did not hesitate to adopt a bold remedy. They divided the book into two sections, each slender enough to vindicate its claim as a genuine pocket-book, and each having its own well-defined scope. The green volume is called the "Architects' and Builders' Pocket Price Book," and the red volume is the "Memoranda Section"—a very rational division of subjects. If it were objected that, as a rule, the same man will require both volumes, the answer might well be that he can easily carry both, either together or, more comfortably, in separate pockets. In each instance the matter has been very ingeniously arranged to facilitate ready reference, the bold-type marginal headings being in this respect particularly helpful.

Spons' Architects' and Builders' Pocket Price Book and Diary, 1911; and Spons' Architects' and Builders' Pocket Book, Memoranda Section, with Tables, etc. Both edited by Clyde Young, F.R.I.B.A., and Stanford M. Brooks, L.R.I.B.A. London: E. and F. N. Spon, 57, Haymarket, W.

Where to Live.

The issue of a third and revised edition of "Where to Live Round London (Northern Side)," which is No. 2 of the series of "Homeland Reference Books," is a sufficient attestation of the merits of a rather novel conception, which owes something to the ordinary guide-book, something, perhaps, to the directory, and a great deal to the spirit which gave life and motion to the Town-planning Act. A judicious combination of these elements gives a book of a novel character, to meet the modern requirements that have arisen out of the improved facilities for transit, and the consequent expansion not only of London, but of the citizen's bump of locality. Formerly, the selection of his dwelling-place was pretty much a matter of "Hobson's choice"; now, within certain by no means narrowly restricted limits, he is free to choose some favourite spot wherein to take his rest and enjoy his leisure, and the books in this series provide him with exactly the data which will enable him to make up his mind on the subject. Each district is described in alphabetical order, and a concise account of its natural features is supplemented by information on all the points which natur-

ally arise when one is contemplating a change of residence—such as railway distance and fares (season and ordinary), rents, rates, price of gas, population, death-rate, educational facilities, places of worship, recreations, institutions, etc., etc. The "Round London" of the title is construed very liberally, the horizon including such "distant views and prospects fair" as those that are offered by Aylesbury, Bishop's Stortford, Dunstable, and Wendon. Several maps are usefully included, and there are a good number of half-tone views.

Where to Live Round London: Northern Side. Third and Revised Edition, 1910-11. With a chapter upon the Geology and Subsoils, by O. A. Shrubsole, F.G.S. Edited by Prescott Row and Arthur Henry Anderson. Pages xviii.—255, 7½ ins. by 5 ins., 1s. The Homeland Association, Ltd., Chandos Chambers, 15, Bedford Street, Strand, W.C.

"The Heel of Italy."

The author of this thoroughly interesting book is to be congratulated both upon his good fortune in discovering an almost unknown district of Italy that was worth investigation, and on the admirable use he has made of his opportunities. Although Italy, as the cradle of the arts, has been, as regards its beaten tracks, rather overdone by the book-producing traveller, Mr. Briggs's lucky experience seems to suggest that there may still be some parts of the country that have been overlooked by the crowd of writers on art and archaeology, who, as a rule, have in them so little of the spirit of the pioneer that they seldom deviate from the main-travelled road, and even on that can never see anything but the show-places that are specially pointed out to them. Mr. Briggs does not for a moment claim that Lecce is obscure and inaccessible. It enjoys, in fact, a very good train service. It is only "unknown" in the sense that hitherto it has not been made the subject of a book; and that its remarkable history, and its even more remarkable buildings, have never before been put to this good use, the wonder grows as one turns over Mr. Briggs's well-stored pages of clear description and striking illustration. Most of the pictures, whether from photographs or whether from the author's vigorously drawn sketches, are of architectural interest, although the appeal is to the art-loving portion of the general public—a fact that probably explains the absence of plans. There is, however, an appendix on "Architectural and Historical Notes on Lecce Buildings," while the bibliography includes a section on "Books dealing with Baroque Architecture."

In the Heel of Italy.—A study of an Unknown City. By Martin Shaw Briggs, A.R.I.B.A., Associate of the British School at Rome, and Extension Lecturer to the Universities of Oxford and Leeds. With 26 drawings by the Author, and 19 photographs. London: Andrew Melrose, 3, York Street, Covent Garden, W.C. gins. by 6 ins., 8s. 6d. nett.

Sewage Disposal Works.

The principles of sewage disposal having emerged recognisably from the welter of divergent and to some extent tentative practice of the many and various "schools," it is now possible to present them in something like settled and coherent form, and this has been, in fact, done almost *ad nauseam*. Mr. Easdale deserves our gratitude, therefore, by his wise decision to avoid a repetition of the usual preliminary details as to the nature of the problem to be solved. He has, in fact, spared us the inclusion of matter that is so far superfluous as to be absolutely skipped, or at least glanced through with

a good deal of impatience, by the majority of readers, and has confined his attention to descriptions, illustrated with drawings and photographs, of the various tanks, chambers, filters, beds, and other details of sewage works, including the numerous types of appliances required in connection with them. The author further points out that he has also departed from the common practice of illustrating actual works, for the reason that these are usually adapted to special circumstances, and are confined to special systems; whereas it must often happen that, in order to meet different conditions, it would be better to follow the suggestions put forward in diagrammatic form; and sometimes it might even be found advantageous to combine certain features of several systems. The various sections of the book deal respectively with screens, storm-water overflows, detritus and other tanks, sludge disposal, percolating filters, effluent settling tanks or humus pits, sand filters, contact beds, storm-water treatment, measuring apparatus, and the sterilisation of sewage effluents. The treatise will be found scientific, practical, and luminous.

Sewage Disposal Works: Their Design and Construction. By W. C. Easdale, M.S.E., M.R.San.I. With 155 illustrations. London: E. and F. N. Spon, Ltd., 57, Haymarket. Pages viii.—256. 5½ ins. by 8½ ins. 10s. 6d. nett.

DEVON AND EXETER ARCHITECTURAL SOCIETY.

The annual meeting of the members of the Devon and Exeter Architectural Society (embracing the counties of Devon and Cornwall) was held at the Central Hotel, Lockyer Street, Plymouth, on Saturday, January 28th, the President, Mr. William H. May, M.S.A. (of Plymouth) in the chair.

The hon. secretary presented the annual report, from which it appears that the membership at the end of 1910 was 79, as compared with 77 for the preceding year. The rules have been revised in accordance with suggestions made by the Council of the R.I.B.A., and a regular scale of charges for quantities has been adopted.

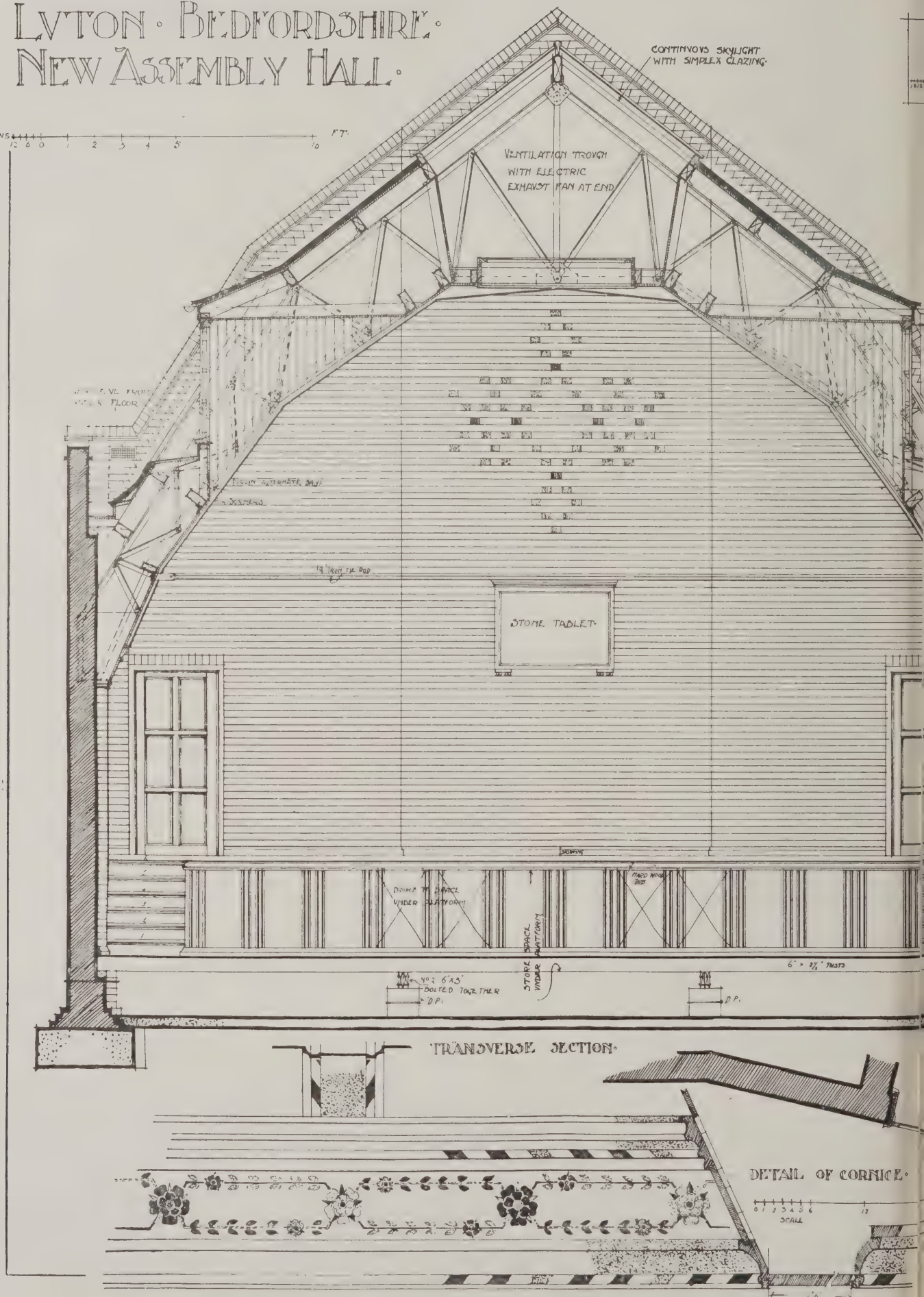
The retiring president, Mr. W. H. May, then delivered his address, which was chiefly devoted to local matters, but included references to the Copyright Bill, Registration, and other national topics. Concerning copyright, Mr. May said:

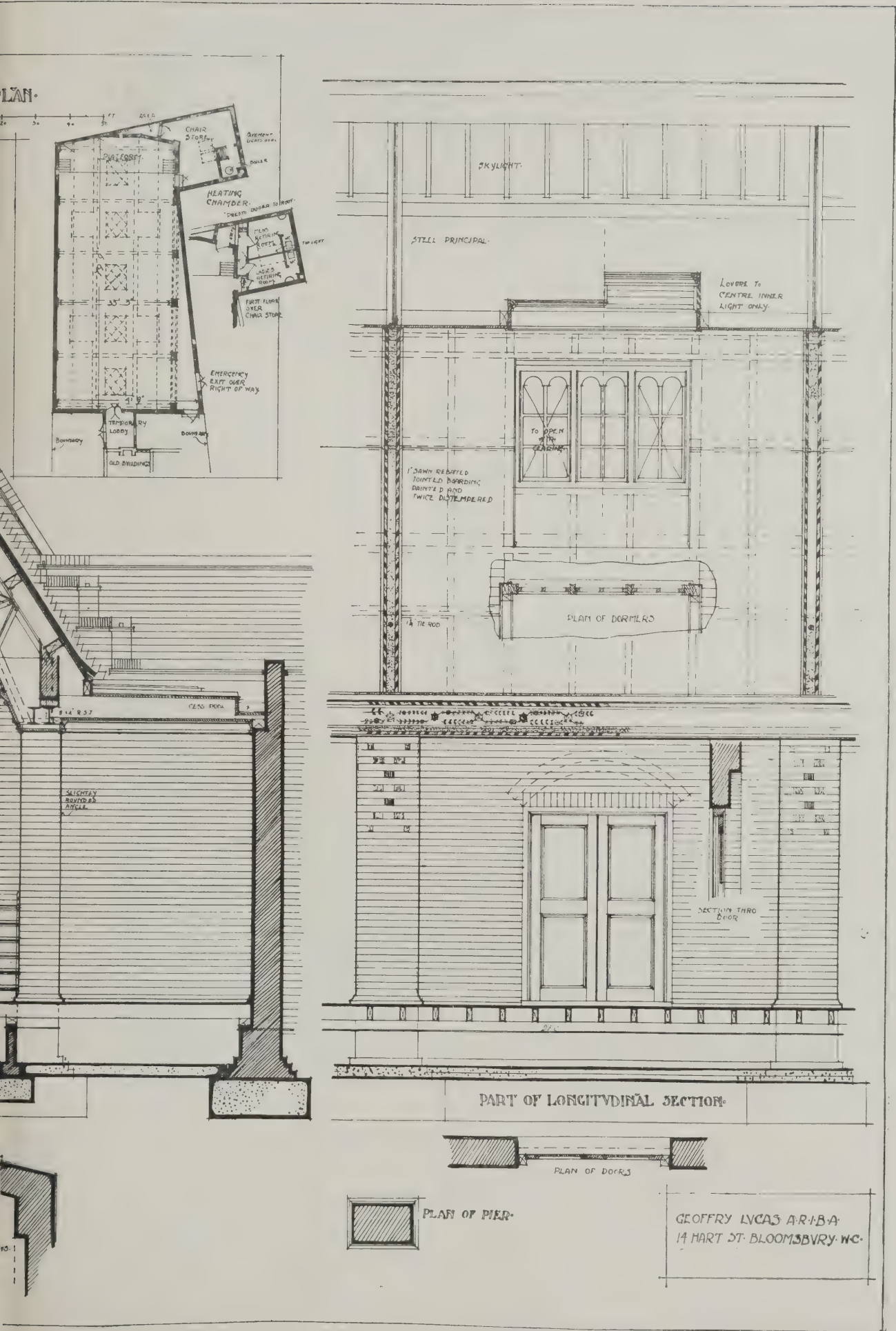
"The Royal Institute Committee has given most careful attention to the Copyright Bill, and it is to be reasonably surmised that at some future date, when either in this Parliament or some other, the Bill is again heard, the action of the Royal Institute will not be disregarded."

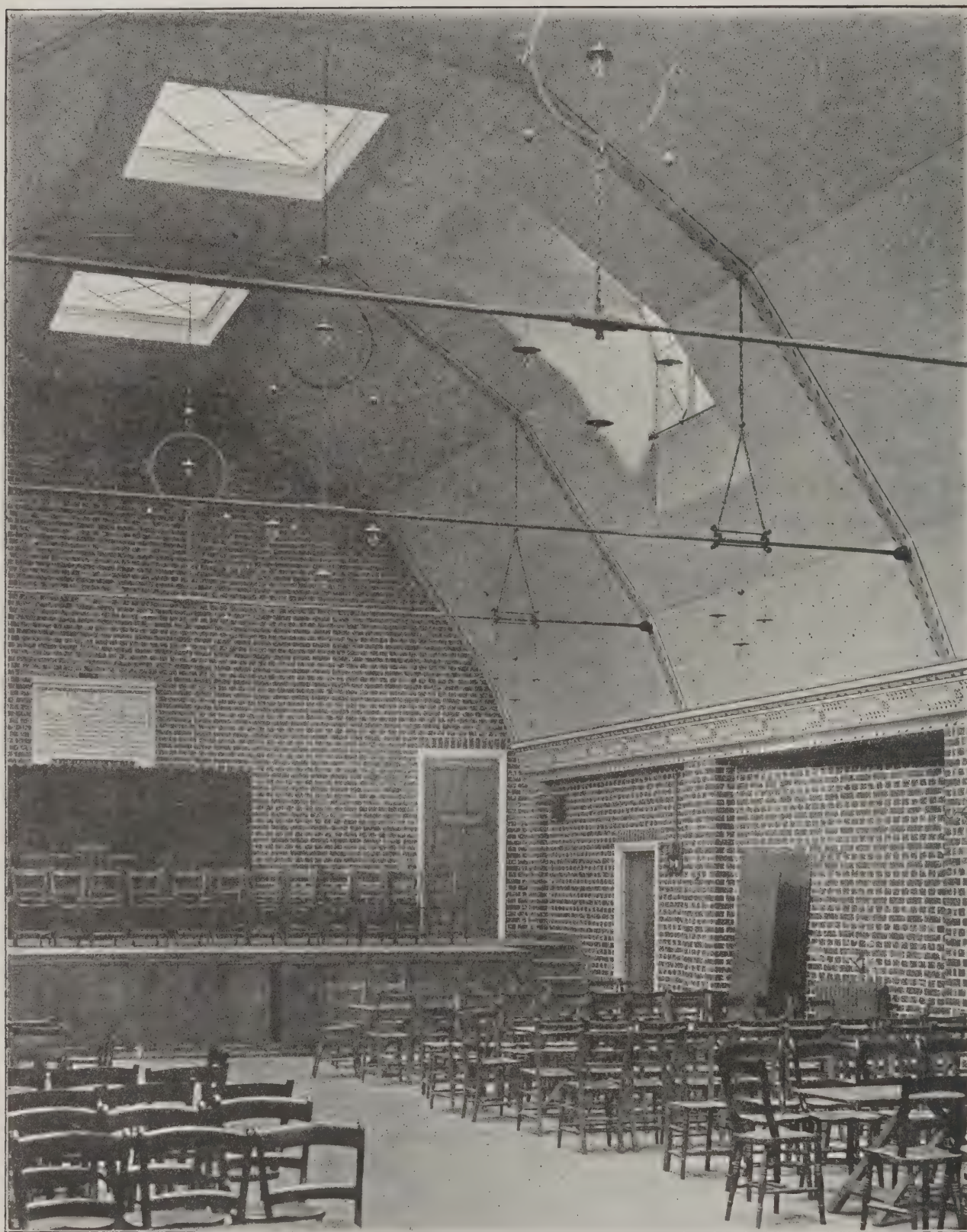
Mr. James Jerman proposed a vote of thanks to the retiring President for his excellent address, and also for his valuable and untiring services in presiding over the society during the past year, which was seconded by Mr. John M. Pinn, supported by Mr. B. F. Shires, and carried by acclamation.

The following officers and Council were elected to fill the vacancies of those retiring:—Mr. James Jerman, F.R.I.B.A. (Exeter), president; Mr. E. Coath Adams, M.S.A. (Plymouth), vice-president; Messrs. H. L. Thornely, F.R.I.B.A. (Plymouth), Sampson Hill (Redruth), H. Watts, A.R.I.B.A. (Plymouth), Mr. S. Dobell (Exeter), hon. treasurer, and Mr. Allan J. Pinn, A.R.I.B.A. (Exeter) hon. secretary.

CONTINUOUS SKYLIGHT
/ WITH SIMPLEX GLAZING.







The roof over this hall is a very effective one, designed and carried out with great care. Owing to the position of the hall it was impossible to light it by windows in the walls. Light, therefore, is admitted through a continuous skylight (as shown by the drawing on the preceding page), with inner lights in the ceiling. Four dormers are also arranged in the roof. The space between the inner ceiling lights and the continuous outer skylight is utilized as an extract shaft. There is an electric fan at one end, which withdraws the vitiated air through louvres in the centre inner ceiling light, while fresh air is admitted through ducts taken from the end walls to behind the radiators. By these means the air in the hall can be changed three times per hour without draught. The construction of the roof is with steel principals, boarded over, tie-rods being employed across the hall owing to the desire not to restrict the width. The hall measures 79 ft. 6 in. by 33 ft. 3 in. between the piers. The ceiling is of rebated jointed boarding, painted and distempered, with a stencil pattern on the cornice and ribs in grey and black.

ROOF OF ASSEMBLY HALL, FRIENDS' ADULT SCHOOL, LUTON. GEOFFRY LUCAS, A.R.I.B.A., ARCHITECT.

THE ATELIER VERSUS THE BUILDER'S YARD.

In this paper, read by Mr. Theodore Fyfe, F.R.I.B.A., on January 23rd, before the Architectural Association, the author argues that while there can be no real building without precise and intimate knowledge, there can be no great building without a wide knowledge of tradition and example.

THE author referred to a paper entitled "A Review of the Tendencies of the Modern School of Architecture," read before the Institute by Professor Pite in 1900, and to the very recent paper, "Architecture or Building," read at Birmingham by Mr. Schultz. Mr. Schultz, referring to day-school training, said:—

"I must say quite frankly that, in my opinion, the theoretic training is not going to make for good building; in fact, to be quite candid, I am not hopeful that a good general type of modern building will be seen until all we architects are abolished, swept away, root and branch." And then he goes on to say that the craftsmen could, and should, be taught to do the architect's work in addition to, or as part of, his own. Further, he says, "Meanwhile, I would plead for a practical basis in the training of your youths. Send them first to do work and see work done, and to learn and know about the nature of materials, and their putting together; teach them architecture as engineers are taught. Don't bother too much about design."

Abolishing the Architect.

The first part of this quotation is quite too big a subject to discuss here. I would only say, What about the interregnum if architects are to be swept away? And, supposing that could be bridged, should we not find that our great modern buildings would, of necessity, fall into the hands of engineers, with craftsmen to work for them merely as superior decorators? I say "of necessity," because it is surely inconceivable that craftsmen could be entrusted to take up the problems of design, in its larger sense, involved in our great modern buildings. They might contrive fine bits here and there, even whole departments of a large building, which, when one thinks of it, is perceptible in a lot of old work; but one could surely get no great building, fine throughout, on such principles?

Revival of the Crafts.

Now let us turn to Professor Pite's paper. He discusses precisely the same question, a possible revival of the crafts for all practical building needs; but he finds no solution therein. He admits that the minor or "decorative" building crafts are already on a sound footing, thanks to William Morris chiefly. "But" (here I quote him) "the major crafts of building construction are still outside the pale of their decorative sisters, and, indeed, are dependent on the master-architect's training, and upon his paper and pencil, for their usefulness or their beauty. We observe the signs of re-vivification in subsidiary cases; are there not prospects and hopes for the greater ones?" He sorrowfully admits not, and says later, in words which I would have you specially note:—"The architect, whether he wills it or would have it otherwise, is compelled back upon himself, and upon his own intuition and experience, for all discernment and expression of the material and its craftsmanship. The architect at the present day is indeed the designer and master-craftsman. He goes backward to the status of the actual workman to bring his work forward to the point of true architecture."

National Style and International Experience.

I think we will all agree there can be no real building without precise and intimate knowledge, and I would further submit there can be no great building, that we call architecture, without a wide knowledge of tradition and example. The big man is not confused and crowded out in knowing all he can that assists his work, and in seeing all he can that has been done elsewhere. We can have no great national style without first having international experience. The only true receptivity is that of the large, healthy, creative mind. Recognising this, one feels it impossible to tie oneself down to either an atelier or a builder's yard. In the Paris Opera House, certainly one of the greatest buildings of modern times, we see the perfect flower of the system that produced great Prix de Rome men; we see a modern academic design, a design founded on the approved training of the schools in France; but we see much more than this, nothing less than a great building that any builder, properly so-called, who loves his craft, would joyfully participate in; and we see a thing beautiful as an organic whole, within and without, the marvellous creation of a truly great architect. The academic and the practical must co-operate to produce such a building as this.

"We have lost tradition."

In any consideration of this subject, one is bound to come full tilt against old work. Its claims are always sufficiently in evidence, and need no apology. It is right thinking about it in the mind of the student that is essential. On the one hand, he must recognise that we have lost tradition in the sense that the great mediæval builders had it. Nothing could have produced such great works as the west front of Rheims except a religion that was child-like in its trust and firm faith—we dare not believe anything else—and an instinctive hold on tradition. Perhaps it is because we have lost both, in the sense of the earlier builders, that we are utterly unable to clearly comprehend how their greatest works were raised, and flounder about between the one-man theory and the theory of the many workers, more or less inspired. We know that we find it supremely difficult, if not impossible, to do similar work that has the same extraordinary homogeneity and singleness of tone. So the student should realise what tradition means and his own relationship to it. On the other hand, he must recognise that the needs of his time demand of him a training in the most frankly intelligent criticism of the whole modern outlook, a criticism which leads to the appreciation of what he has been trained to regard as the best. He must realise that his achievement is a thing of thought based on a principle of selection as thorough as it is ruthless; thorough, because he must have principles, the more the better; ruthless, because there is a mass of undesirable opinion hanging about the whole game, something which clouds the issue, losing many a man in shallows, uncertainties, and weak work.

The True Liberalism of Art.

To say about a method of doing something, "This won't be satisfactory, it was done at So-and-so, and was bad," may

sound pedantic, but it is in the right spirit. This is the true liberalism of art, which can advance, not because it despises, but because it fears and knows; not contempt, but knowledge, its what we want.

The mass of undesirable opinion before referred to hangs particularly about the subject of old work. Those who make a fetish of it, because it is old work, are largely responsible for this. Setting one's face against such an attitude does not necessarily mean that the student is a foolish iconoclast. It is only ignorance that is abusive.

The Atelier System.

But, you will ask, what is the training that will enable the student to appreciate only the best, and of what does the best consist? Now, here, I think, is the value of the atelier; for it is only, it seems to me, by some such system as the atelier that we are able to find an answer to this most important question. It is through lack of real, systematic, profitable training in design that most of the educational systems in this country suffer—not so much in design perhaps, as in principles that govern design. An architect, I submit, must most emphatically be trained in certain aspects of the theory of his art, just as certainly as the musician. The two arts run parallel, and are very similar in this respect. The gain to the student is immense when one is able to point out the world that lies before him if he is able to recognise that certain proportions and rules—which are at least as old as the Greeks—are discoverable in all great buildings.

To the free and elastic mind this will not become a fetish; far from it; it will recognise the limitations of all rules; but, on the other hand, it will gain immensely in stimulus by adding bit by bit, and will advance thus by real experience. The old weapon, having served its day, will form part of the armoury if it is sound, and be thrown away if it is bad, and a newer and better one will take its place. Here, again, ought to be progress.

The Builder's Yard.

The study of structure is something which appears to be more intensely modern than any other aspect of the question; but is it so very modern, after all? Here is our "builder's yard," but much more. On the one hand, it is all that old work can teach us, as material evidenced in architecture; and, on the other, it is the engineer's table, the plumber's shop, the mason's yard, the multitudinous crafts that appear in a really great building. It is just this about the Paris Opera House that fascinates. This is the ideal, but how seldom achieved! And now, when I speak about the "builder's yard," it is perhaps hardly necessary to explain that I mean by it the extreme that it represents—the view that the young architect must learn to handle tools himself before he can build aright; that he must be a plumber, or mason, or carpenter, and, if possible, all of them, in some measure, if he is to have that intimate knowledge of material that alone produces good work. Here I will state my own position. I recognise that the architect needs this intimate knowledge, this subtlety of appreciation in material; the knowledge that can enable one man to build a beautiful gable in brick while another, with exactly the same bricks and exactly even the same form of gable, produces something which is quite ordinary. But where I demur is in believing that architecture is only this, and that there is not another, and larger, side. To do the exponents of the "builder's yard" justice,

it is only the narrower among them who really believe the contrary, or act as if they did. It is this pernicious hatred of the Renaissance, and of all that people are pleased to call sham building (which in some form or other is as old as any building that ever was), this one-legged theory that the column and the order are a damned thing, that is responsible for half the mischief. All building is surely part of one great craft, the greatest constructive craft there is, whether it be evidenced in a Surrey cottage or in Westminster Cathedral; the one is but the other in little. Thought, care, selection, and trained experience are requisite for both, though the relationship of parts to the whole is somewhat different in each. It is at this point that we appreciate the fascination of Professor Lethaby's remark, quoted in Mr. Schultz's paper, already mentioned, "Design," he says, "is merely contrivance, the doing of work in an ordinary way, just like cooking." On the other hand, has not Professor Lethaby been lately much occupied with the principles that underlie Greek building?

National Style.

But though all architecture, large or small, is one craft, it seems to me we must appreciate that large, formal, ordered buildings demand a more rigid preliminary process in the mind of the architect than smaller work does. We in England have lost a tradition of academic style for large buildings. France has retained such a tradition, or at least built up a modern one of its own; but then in England we have a much surer hold on the whole intent and meaning of smaller work, such as domestic and church buildings. Our best work in these directions is not imitative; it is really part of the national life. To design such work there is much to be said for the "cooking" process: but though ordinary *contrivance*, ingenuity, common sense, are the basis of all design, whether in large things or small, for the great buildings of modern times—our lecture theatres, town halls, art galleries, museums, libraries, flats, railway stations, important commercial buildings—all buildings that can be called monumental, we need, it seems to me, a basic principle, or principles, in our design, and the simplest way I can state it is this: In what way do we relate our processes of thought and draughtsmanship to the actual structure in the execution of large, ordered work? Now, if I may state my own answer, here we want the "atelier," but we want more; for the atelier, in these remarks, is only a symbol of modified, not comprehensive power. Nevertheless, we do want the root-principle of it, to my mind, and that alone which can make draughtsmanship the means that it ought to be. We want to begin with our subject at its beginning, to work from small to large, to visualise our subject as a whole, on paper, and to keep scale, proportion, mass, harmony, before us all the time. We want to work this out to its utmost possible achievement on paper before we touch anything to larger scale; and so pass on from this, and by means of this, to larger and yet larger, till we reach the "full-size," making innumerable studies—line perspectives, isometrics, diagrams—by the way. Now, this, it seems to me, is the true principle and meaning of draughtsmanship in monumental work, and the most certain process for securing good architecture. And the "more" that I have mentioned, what is it? Simply all that

we have in our life—the utmost extent to which our character can inform our work. We all know how, after seeing a great picture exhibition, entering some rooms simply irritates us, and entering others pleases and rests. That is just illustrative of character in work, the power that can be gained by one man "thinking back," as Professor Pite says, so that he can truly bring forward.

The multitude of practical details must be studied thoroughly and criticised with that larger view which is only possible to the impartial mind. Such study will become easier as time goes on, and it can be achieved without the drastic method of apprenticing oneself to a mason. Nay, can it even be properly achieved at all by such a method? That, of course, depends upon the man, but should it be necessary to make it a main plank in our platform?

Let us take these great buildings of the past at random, but representative of great periods in building; say, the Parthenon at Athens, Sancta Sophia at Constantinople, and the Farnese Palace at Rome. The two first of these, thanks to the immense value of a traditional style, might have been *contrived* in the sense meant by Professor Lethaby, though each of them is associated with a great master-builder.

Noble Buildings.

The Farnese Palace could assuredly not have been so contrived. Begun by Sangallo, it was seized by the giant hand of Michelangelo and reshaped to his embodying. I do not ask you to argue whether or not it has the same intrinsic purity of style that the other examples I have quoted possess. I simply ask you if it is not a noble building? And, since then, has any great building been erected in Europe without one informing mind behind it? This is a lesson that history teaches us, and that we cannot surely ignore. Since then the times have become more and more complex. The days move with breathless haste. Can we afford, as architects, to lose our grasp on the bigger sway? I would not argue for a moment that we should not throw our students as much into the builder's yard as possible. With that part of Mr. Schultz's paper I am entirely in agreement. But does all history, all experience, teach us that harking back to something which has its roots buried in the beginnings of things will be to our advantage? We may bemoan our lack of the sheer wonder in creative building attained by some of the older men, but the remedy must surely be with ourselves, and not with others. There are those among us who are always bemoaning the lack of architectural intelligence in the public. To such I would say, "Don't think so much about other people's shortcomings; think more about your own." The public appreciation of architecture is exactly what we architects care to make it. We, and we alone, have to be chiefly responsible for showing the public—whose needs are in the main intelligible, reasonable, and in the majority of cases, absolutely practical—that the best building it can get is the most artistic building, because it is the fittest for its purpose. I believe this can be done if the architect will but put his shoulder to the wheel.

DISCUSSION.

Mr. Curtis Green said that it was more than probable that clear thinking will evolve in the near future a system of education that will make some of us regret our own lack of opportunity. But in the

end it is the men that matter more than the system; we need the system to raise the whole general average of building throughout the country on to a higher plane; even then it is the full man in whom the root of the matter is planted, who will, whatever his initial mistakes and failures, express in architectural terms the virtue of his time. All of us will be agreed that many of our failures could be avoided by more prolonged training; we are in too much hurry to run into active practice either for financial reasons, or because we are afraid that our friends will not wait for us. Should this additional training be in the atelier or in the builder's yard? In practice the architect must have experienced something of both. So far as the two represented two different schools of thought, he was on the side of the builder's yard. The two schools might, he thought, be fairly described as the *real* and the *ideal*; the real standing for the workshop, and the ideal for the studio. He believed that at the present, and for some time to come, our art could be best served from the humbler side. The *realist* argues from nature upwards; starting from reality and never losing sight of it. The idealist argues from an idea already formed; starting from a conception, he argues downwards, rejecting realities where they do not fit in to his preconceived scheme. The *idealist* has the more lofty pretensions. Half of the charm of the historic architecture of this country lies in the materials used and in the skill with which they were laid down. He believed that the weakness of modern English architecture lay with the producer rather than with the designer. The British working man is the stumbling-block in the path of our best architects. Through no fault of his own, his natural taste for sound craftsmanship has been perverted. He has had set before him the false standard of excellence created by machine labour applied to illegitimate ends. He has learned his lesson thoroughly. The subdivisions of his one-time craft evolved in factories and by trade unions have destroyed both the self-respect and the pleasure which he once derived from his craft. To those who believe that the standard of craftsmanship is connected with the well-being of architecture, the detached and superior attitude of the atelier will hold little hope of the future. Can the conditions in which our work is carried out be studied in the atelier? Can we influence or direct the man who crystallises our idea until we learn what he has to teach us about the genesis of that idea? Can we design rightly in materials the properties of which we do not understand and cannot learn from books? The whole question of the right and the wrong use of mechanical labour is for us to pronounce on; where can we learn about it but in the builder's yard? If during our student days we are trained to deal with the real things first, not standing aloof from the facts of life, we may come to express in concrete form the ideal to our fellow-men.

Mr. Arthur Keen said he thought that Mr. Fyfe had at the back of his mind the idea that the A.A. method of tuition was the ideal.

Mr. W. H. Ward (of Theobalds Road) said they all seemed to agree that tradition was necessary, and the only way to get into touch with tradition was by some atelier training. Trades in the building industry were so involved that it was impossible to go through them all; but a



Economy of outlay having been an important consideration, the design of this church is necessarily simple in character: the effect of the interior, nevertheless, is by no means bare, and a feeling of dignity is given by the aisles, which are unusually lofty. The walls of the aisles and the morning chapel are panelled to a height of 12 ft. and distempered an olive-green colour above. Seating accommodation is provided for 800 worshippers. The total cost of the church was £9,000. Messrs. T. H. Kinglerlee and Sons, of Oxford, were the builders.

CHURCH OF ST. PAUL, WEST EALING, LONDON. HALL-JONES AND CUMMINGS, ARCHITECTS.]

little of masonry and carpentry would prove useful. The villas of France were, on the whole, ghastly failures. They either attempted to be grand monuments on a small scale, or drifted into some awful form of new art.

Mr. Seth-Smith observed that it was of enormous importance in a school like the A.A. to convince the pupils that principles had been thrashed out. If not, he failed to see with what confidence a student could enter the schools. He differed from Mr. Green as to lofty ideals being questionable. The greater the ideal the greater the achievement. The purely academic course of instruction was expressed in the Ecole des Beaux Arts; and the smaller architecture of France was not worth looking at in consequence of this training. English domestic work was generally acknowledged to be really beautiful; but it was advisable to supplement instruction in the smaller work by something of a more monumental kind. Referring to the Opera House, Paris, the speaker remarked that he knew an Englishman who was present at its erection, and who told him that the building was a whole tissue of falsehoods. If a student had a year to spend, continued Mr. Seth-Smith, he could not do better than utilise it in a workshop experience. He had read how Sir Gilbert Scott, lacking this practical experience, proved a veritable bugbear to the workmen, who welcomed his departure from the scaffold. During the course of his remarks, the speaker alluded gracefully to Mr. H. H. Statham's paper, delivered at the previous meeting.

Sir Brumwell Thomas said there was very considerable agreement in favour of academic training in France. There was the Charles Garnier style on the one hand, and on the other work of a domestic character, which was not so satisfactory as the former. In England the reverse was the case. There were indications, however, of a coming spirit in French domestic work. Sir Brumwell then described a delightful villa he had unexpectedly encountered in France—one that was quite a refreshing departure from the usual style of house. But, they would enquire, who was the architect? Monsieur John Belcher, of London. The French student was subjected to the most exhaustive tests in every respect. The first two years of his

training were taken up in developing the artistic qualities; the second two were highly scientific, and quite in advance of anything in England; and a further eighteen months were occupied in cultivation of the grand manner. Concluding, the speaker said he was strongly of the opinion that academic training in England must come to pass.

Mr. Louis Jacob said they all knew that the architect who would take hold of the tools and show how the work should be done was a terror in the hearts of all builders. Architects of this kind invariably produced sound building, but he had never been struck by the artistic quality of the work.

Mr. G. Drysdale suggested that the fact of our being English accounted for our lack of appreciation for French domestic work. Architects, he thought, would benefit by a little more reason and a little less taste.

Mr. Walter Millard advocated the combination of the best points of the atelier and the builder's yard. As to the mastering of all trades, if this was a serious proposition it logically meant mastering all tools as well.

Mr. H. P. G. Maule said that the title of the paper was misleading. Mr. Fyfe did not mean the atelier or the builder's yard. It was essential that training should be both academical and practical. The architect should be able to direct and control; but he was not a craftsman. Concluding, Mr. Maule emphasised the necessity for simplicity in the initial stages of a student's tuition, and the importance of gradually approaching ideals from the more humble and practical side.

Mr. D. A. Foster and Mr. Cart de Lafontaine having made a few observations,

Mr. Gerald Horsley recalled that this same subject was greatly agitated about twenty years ago, and referred to several of his contemporaries who had started as architect-builders, but who had not had a very wide range of work. Speaking of the scheme of the Board of Education, Mr. Horsley said that this dealt only with four years of the student's training, and made no provision for what was to come after. He hoped that the new Board would repair the omission.

Mr. Allan Potter said that we were in very much the same position as the mediævalists. As the Gothic arch was to

the Classic lintel, so was the steel girder to the Gothic arch.

Mr. Arthur Keen decided that no vote should be taken. Mr. Green's instance of the brick wall seemed to him to be a point in favour of educating the bricklayer rather than for the training of the architect. The architect had well-defined functions. He had to deal satisfactorily with the various professional problems that arose; and it was practically impossible for him to proceed in his work except by designs on paper. To expect him to work in the open was out of the question.

Mr. Fyfe replied briefly, observing that they had necessarily to be practical men: he had particularly emphasised this in his paper. The Opera House was said to be a sham building. He raised no objection to this so long as it was a fine building. With regard to the title of his paper, he had employed the term "atelier" purely as a symbol around which to arrange his matter.

FEDERATION NEWS.

Leicester.

The annual dinner of the Leicester and District Building Trades Employers' Association was held at the Grand Hotel, on January 26th, Mr. F. Beck presiding.

The President proposed "The National Federation," remarking that it was the one body in the country which tried to unite employers in the building trade with the view of protecting their own interests, and bringing about harmony among employers and employees. The council of the Federation had done yeoman service for the trade, and he hoped it would continue to grow in strength and importance.

Mr. James Wright (senior vice-president of the Federation), Nottingham, replied, outlining the work and objects of the Federation.

Mr. A. Chambers submitted "The Leicester and Leicestershire Society of Architects."

Mr. W. M. Cowdell, F.R.I.B.A. (President of the Leicester Society of Architects), and Mr. Clement Stretton, A.R.I.B.A., replied.

Mr. G. A. Hewitt proposed "The Midland Centre," and Mr. W. Yates (vice-president), replied.

Bath.

The annual meeting of the Bath Association was held on Saturday, January 14th, Mr. George Hayward in the chair.

A discussion arose as to the advisability of altering one of the working rules; but after an expression of the opinion of those present, it was decided to make no alteration.

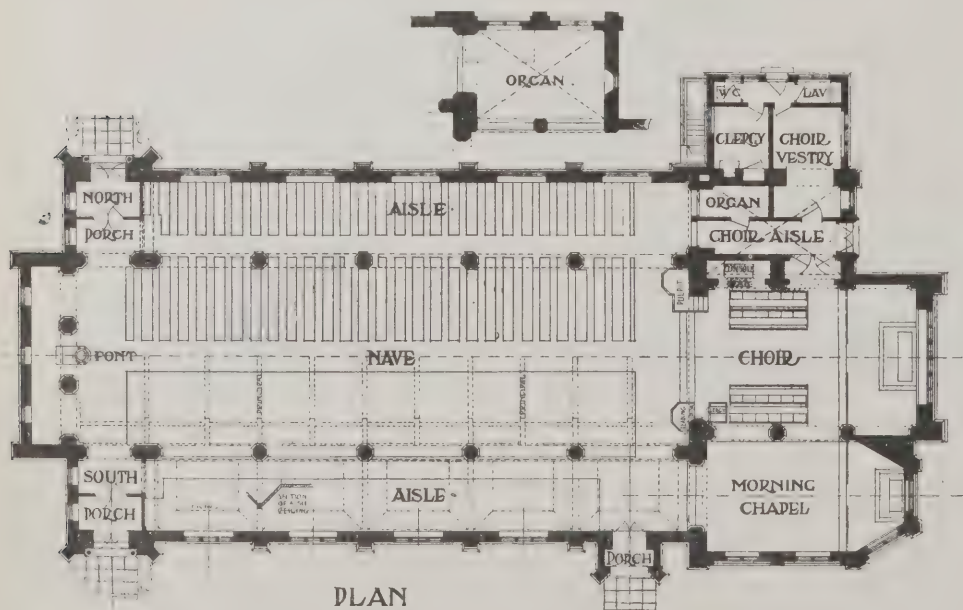
The secretary then read his annual report, in which he congratulated the members on the completion of twenty-one years of the association's existence since its reorganisation in 1890. The past year has been uneventful; but trade, on the whole, has shown a slight improvement on the previous year. The only question with regard to labour that arose during the year under notice was that with regard to an application by the painters for an increase from 6½d. to 7d. per hour, as to which it was decided that the state of trade did not warrant any concession. During the year eight general meetings (of which four were special), and ten committee meetings, have been held, and increased interest in them has been noted. Two firms have ceased to be members, and five new members have been elected. One honorary member has resigned, and one has been elected; and the association now comprises 36 firms; with 42 members in the active list, and 20 firms as honorary members.

On the motion of Mr. C. H. Long, seconded by Mr. F. J. Blackmore, the secretary was accorded the best thanks of the association for his able and exhaustive report.

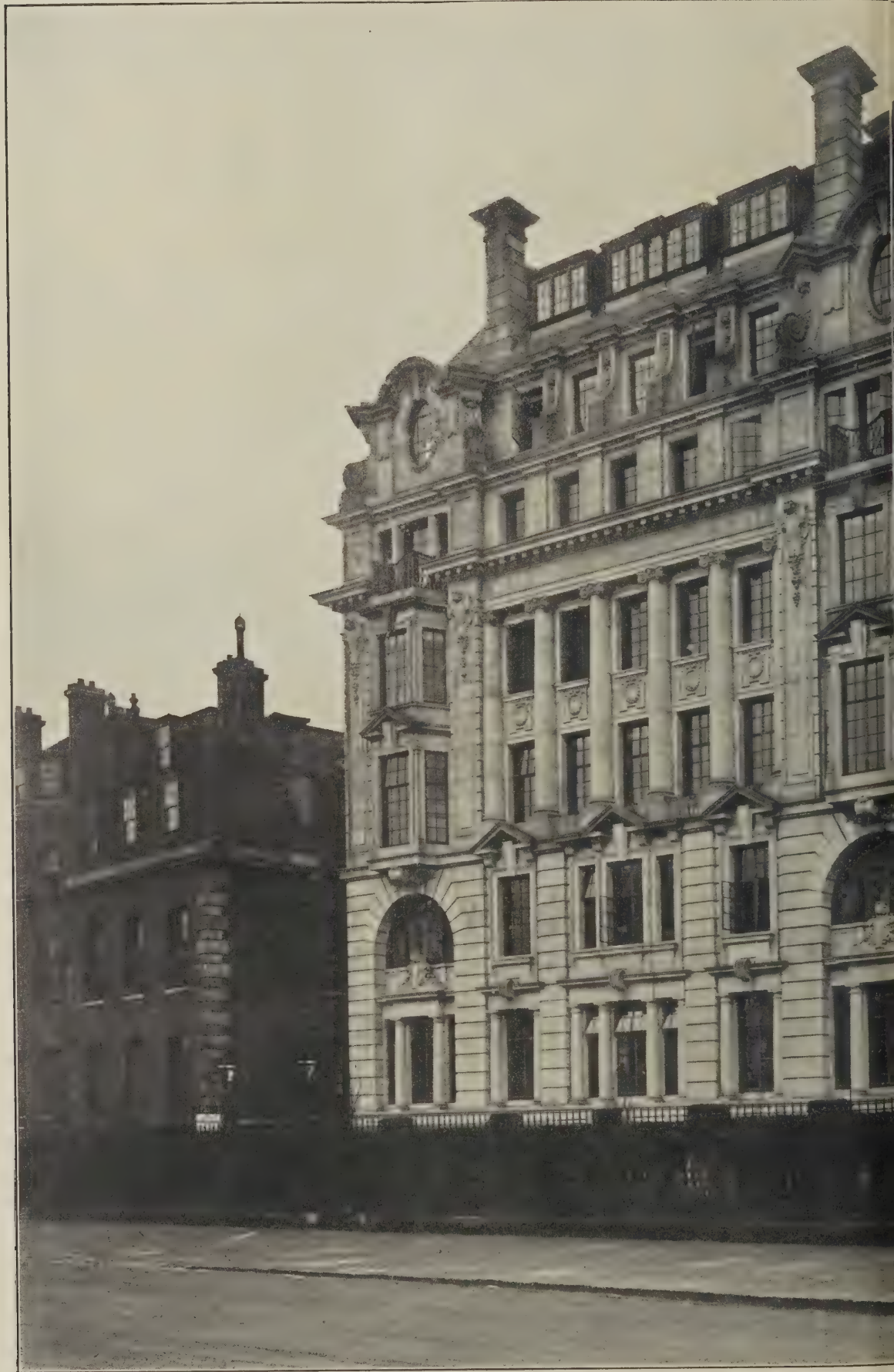
The Hon. Treasurer presented his accounts as audited for the past year, showing a very small but satisfactory increase of the balance in hand on the previous year.

Mr. Stephen Ambrose (who had previously filled the office in 1894-95) was unanimously elected president for the ensuing year, and Mr. Walter Allan Sheppard vice-president. Mr. Councillor Sydenham consented to perform the duties of hon. treasurer for the 11th year in succession. Mr. Edward J. B. Mercer was elected secretary for the 22nd time. The following members, after a ballot, were elected to serve as a committee, viz., Messrs. H. H. Knight, W. Morris, F. C. Chancellor, and F. J. Blackmore. Messrs. C. C. Wills and E. Ireland were elected auditors, and a vote of thanks was accorded the retiring auditors, Messrs. Wills and Amery. The retiring members (viz., Messrs. Ambrose, Blackmore, Hayward, Erwood, and Ireland) were re-elected to serve on the executive committee of the South Western Federation.

It was agreed the annual dinner should be held in the second week of February.—EDWARD J. B. MERCER, Secretary.



ST. PAUL'S CHURCH, WEST EALING, W.



NEW BUILDING FOR THE ANGLO-AMERICAN OIL COMPANY, WESTMINSTER. FA

A view of the entrance front, from Queen Anne's Gate, was published in our Edition de L



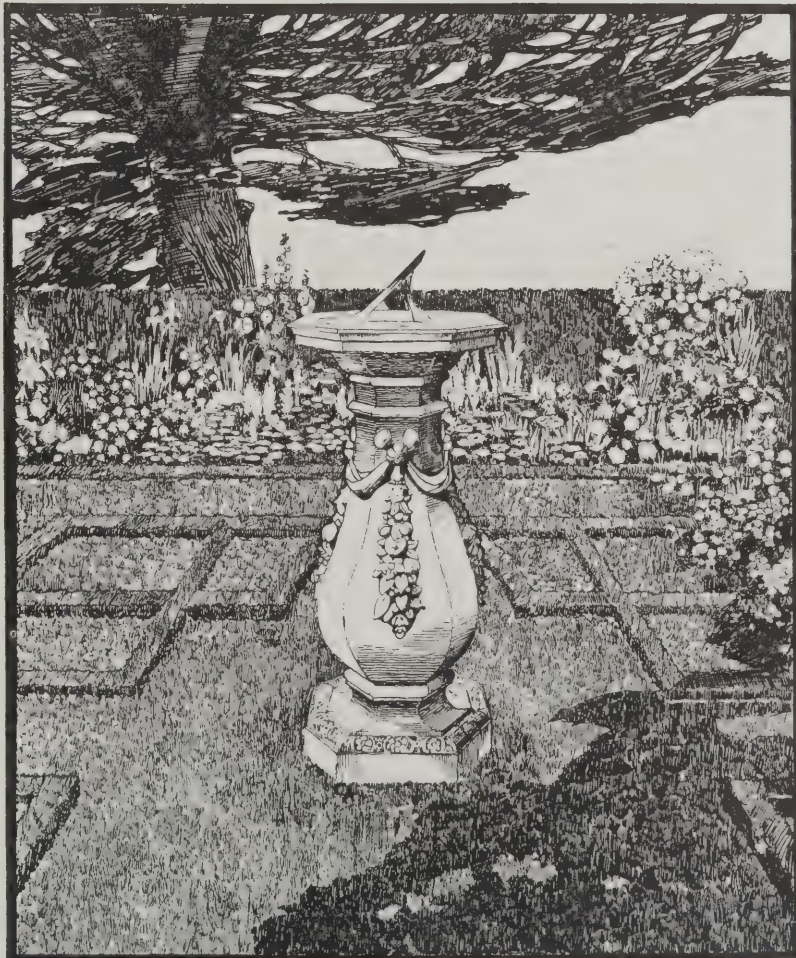
O ST. JAMES'S PARK, ERNEST RUNTZ, F.R.I.B.A., AND SON, ARCHITECTS.
ber 31st, 1910), when the design was incorrectly ascribed to another firm of architects.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 15th, 1911.

Volume XXXIII.

No. 838.



DESIGN FOR A SUNDIAL IN A FORMAL GARDEN.
WRATTEN AND GODFREY, ARCHITECTS.



This is the finest, as it is the newest, of the Paris railway termini. The facade is of stone, richly carved, while the roof exhibits some fine leadwork.

THE GARE D'ORLEANS, QUAI D'ORSAY, PARIS. M. LALOUX, ARCHITECT-IN-CHIEF.

THE ARCHITECTS' & BUILDERS' JOURNAL.

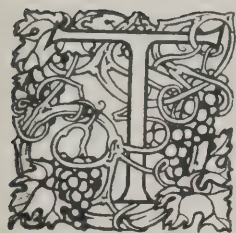
FEBRUARY 15th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 838.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

The St. Paul's Bridge Scheme.



HE date is near, we believe, when the Corporation will apply for their Bill for the proposed St. Paul's Bridge. That the application will be opposed, in one way or another, there seems no doubt; but it will be as well to make clear why the Bill ought to be opposed by all those who have any interest in the architectural improvement of London, as the chief city of the Empire.

There has been a great movement of late in regard to the architectural importance of town planning; the necessity for considering vistas and the alignment of streets with relation to open spaces and public buildings. But so far as the Corporation of London are concerned it would seem that all this has been entirely thrown away, and might as well never have existed, if we are to judge by the nature of their proposals for the new bridge, and the important road on the south side of the Thames which is to lead up to it. Their proposed line of road is shown by the continuous lines on the drawing reproduced on the next page. Here is proposed a road laid out on no consideration but that of economy and supposed convenience for traffic; a road promising no vista and no architectural effect of any kind. The scheme includes a great new bridge over the Thames; but no design of the bridge has been published, nor included in the application; the plans showing nothing but a very commonplace roadway scheme. That the Corporation can obtain any Bill without even letting it be known what kind of bridge they propose to build, or exhibiting any design for it, seems preposterous; at least it would appear so if, unfortunately, we did not know how careless is the Parliament of this country where architectural questions are concerned.

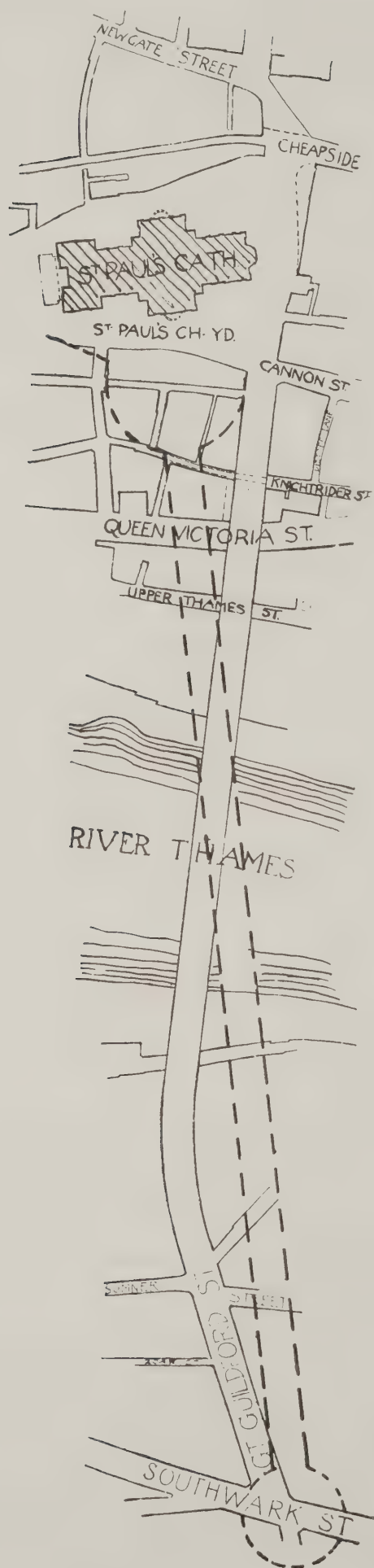
But what is still more reprehensible is the attitude which the Corporation, as represented by the Bridge House Estates Committee, have thought proper to assume in regard to the scheme. They appear plainly to assume that because they find the money they have a right to do what they like, and that any outside opinion on the subject is an intrusion. Do they really suppose that London is their property, and that they have the right to play with the architectural improvement or disfigurement of London, in a scheme in which future generations are also concerned, just as they please at the moment? If so, it is time that they should be told the contrary in the plainest manner. A man may do what he likes in his own park, no doubt, but not with the public architecture of a capital; and the funds which the Corporation have to expend on such a work as this they morally, if not legally, only hold in trust for the public good. They have no kind of right to say, "because we find the money we can do as we please"; or to treat the suggestions and advice of the Royal Institute of British Architects with something like impertinent resentment, as they undoubtedly did.

The Institute has at heart the architectural beautifying of London, a subject which they understand, and which the Corporation authorities apparently neither understand nor care about.

From the moment when there was talk of the new bridge it was apparent to everyone with a sense of the architectural fitness of things that here was a grand opportunity for opening out St. Paul's, and making a stately and impressive approach to it on the southern side. What does the proposed line of road do? Simply treats St. Paul's as an obstacle to the roadway, to be got round. We do not believe there is any other capital in Europe where anyone would venture even to propose such a scheme. In Paris, we are certain, anyone who proposed to lay out a new street leading up to the vicinity of a great building without any consideration whatever of so making it as to be axial with the building, would be laughed at. On the drawing reproduced on the next page we have shown, in heavy dotted line, the route which such a road should take, so as to produce the finest effect. It must be observed that the crook at the southern end of the official plan is only due to adopting at that point the line of an existing street, which would in any case have to be pulled



A SCHEME FOR THE ST. PAUL'S BRIDGE.



The thin continuous line shows the route proposed in the Corporation Bill; the heavy dotted line indicates another, and a better, route.

THE ST. PAUL'S BRIDGE.

down in order to be widened as part of the new road; it is not at present of the width shown on the plan; so that there is little even of economy there. The new street and bridge should lead straight up to St. Paul's dome, which would form the central object at the end of the vista, the street ending in a wide semicircular *place* opposite the south side of the cathedral. We are quite aware that it would be costly, but in so great an opportunity for a grand effect cost ought not to be counted; and it would even be fitting that Government should, if necessary, supply part of the funds, as the French Government would almost certainly do in a similar case; a great improvement in the capital city being a matter of national, and not merely of local importance.

In the drawing on the preceding page we suggest a still larger, and what would be a really magnificent, scheme. At the west end of the Borough, at A, there is a circular open space. Form a similar circular *place* at B, at the eastern end of that straight line of street, and from that run the new road up to the bridge and to St. Paul's, not as a mere street, but as boulevard a mile long, with trees on each side. It would be one of the grandest improvements ever carried out in London, and it would have this specially beneficial result, that it would form the first inroad of beauty, as one may say, into a district of London which is at present peculiarly devoid of charm—a desert of more or less sordid-looking streets and ugly and uninteresting buildings. It would raise not only the enjoyment of life, but the value of property over a great portion of South London, and would be a blessing to many future generations.

Both schemes present one slight objection, which we will anticipate; that the bridge would not be quite at right angles to the course of the river at that point. But the objection is less than may appear at first sight. On the plan we propose, the situation would be dominated by St. Paul's Cathedral, a fact which would quite explain the line of the bridge and reduce it to a secondary consideration; and if properly treated architecturally no ill effect would be produced, as the variation from a right angle with the river bank is not very great, nor would it be very noticeable in execution.

There is, in addition to the architectural question, a practical objection to be considered with reference to the Corporation scheme, which is emphasised in a letter, signed by several eminent architects, that appeared last week in the *Times*, the signatories including Mr. Belcher, Mr. Ernest George, Sir Oliver Lodge, and Mr. J. W. Szlumper, a member of the Institution of Civil Engineers. After remarking that questions connected with a new bridge over the Thames are not only of metropolitan but of national interest, they proceed to comment on the probability that subways for tramways, though not actually mentioned, will form part of the scheme, and they would therefore impress upon the public the necessity of insisting upon a guarantee from the authorities that, if this bridge scheme is carried out, the tramways connected with the scheme "must not pass through a subway so near to St. Paul's Cathedral as to be a very serious menace to the structure." Knowing what we do about the nature of the foundations of St. Paul's, we know that this is a very serious danger, and that every precaution should be taken to guard against it.

But our chief desire, that one of the finest opportunities for a grand architectural improvement that London has ever had, should not be thrown away through ignorance, indifference, and false economy.

Completing the New Government Offices.

PREPARATIONS are now being made for the commencement of the final block of Government buildings on what is popularly known as the Great George Street site, and before long the work of excavating the foundations will be taken in hand. Altogether the work is expected to occupy six years. The

corner block of offices facing St. James's Park is to be allocated to the department of the First Commissioner of Works, who is at present at Storey's Gate, having removed to that position some years ago from Whitehall Place. There is now only one private house remaining on this side of Great George Street—No. 27—which at the moment is occupied by the Companies Department of the Board of Trade, but this, together with the premises of the Institution of Civil Engineers, which were erected only a few years ago, will shortly be demolished, the latter body having new buildings in course of erection on the opposite side of the thoroughfare. The new block will then join up with the Local Government Board, and an opportunity will be afforded of completing Brydon's circular court. Another improvement in the same neighbourhood, which will also be effected before long, is an alteration in the position of the historic Storey's Gate, at the bottom of Great George Street, which takes its name from Master Edward Storey, who was the keeper of the King's Birds in the time of the second Charles.

Builders' Business Methods.

THE periodical returns of bankruptcies in the United Kingdom invariably show builders at the head of the list. Naturally enough, builders are by no means proud of that bad eminence. They protest that, as a body, they do not deserve it. Their invincible position at the head of the poll sets up a very damaging impression, and a really unfounded prejudice against an honourable industry. But this being so, how does it come about? The explanation is simple. The industry offers peculiar temptations to the adventurer—to the workman who, with scant capital, or none at all, essays to join the ranks of master builders, and immediately defies the saying that "no man buildeth a house without first sitting down and considering the cost thereof." He usually goes right ahead without troubling to make any calculations at all; but his subsequent ruin is not much more complete than that of the bona-fide builder, who, while employing a certain amount of capital, "never quite knows how he stands," because he knows nothing, and often pretends to care less, about the details of book-keeping and the accountancy side of his business. Consequently he is constantly working in the dark, and blindly trusting to luck that he will come out on the right side of the contract, or at any rate not so very far on the wrong side. It is such men as these who swell the bankruptcy lists, and bring undeserved discredit on the entire trade. They are responsible, moreover for other evils that are even more tangible. In their reckless disregard for the rudimentary principles of business, they tender upon imperfectly ascertained or wantonly diminished data, and snatching the job from more prudent and businesslike tradesmen, realise a loss on it, perhaps in spite of frantic economies (to say nothing of scamping)—which, again most undeservedly, tend to bring the industry as a whole into disrepute—and finally find themselves in the hands of the official receiver. Bad business methods (not necessarily including bad faith, although the two evils seem to have a sort of mutual affinity) lead, in fact, to all kinds of rottenness, and this, in effect, is the chief reason why builders habitually head the bankruptcy list; although, at the same time, it should not be forgotten that, the figures being absolute, and not proportional, and building being the largest synthetic industry in the kingdom, the large total of bankruptcies is perhaps not much more than commensurate with the large total of practitioners. The failures would be far fewer, however, but for the undue prevalence of such conditions as those to which we have ventured to draw attention; and the substantial and reputable firms who conduct their business on sound commercial principles, and with irreproachable probity, would be spared the annoyance arising from an utterly unjust general aspersion upon their calling by a public that is not good at discrimination.

The Decision as to St. George's Hall.

THE Finance Committee of the Liverpool Corporation again discussed, on February 11th, the request of the King Edward Memorial Committee that the Corporation should provide a site by the St. George's Hall for an equestrian statue to King Edward. Mr. Norman Shaw's design, showing a double stairway approach to the south portico, in place of the present unbroken podium wall, was again before the Committee. By a majority of nine to four the Committee decided to approve of the proposal to cut into the wall, subject to a modification of the details to be discussed later. The proposed position of the statue, however, did not find favour, and ultimately the Committee resolved to recommend to the Memorial Committee a variation of the scheme. They agreed unanimously to reserve spaces for statues at either end of the podium wall in St. John's Lane, and asked the Memorial Committee to put the King Edward statue on the site nearest to Lime Street. It is understood that the Memorial Committee will accept this solution. The Lord Mayor, who is chairman of the Memorial Committee, was present at the Finance Committee's meeting, with Mr. Goscombe John, the sculptor. The new plan meets certain objections to the placing of a high statue directly in front of the columns of the south portico, but not the views of those who oppose any interference at all with the simplicity of the podium. We suggest that further competent advice should be taken upon the whole question before the irrevocable last word is spoken.

The Mall Difficulty Settled.

THE difficulty of the Mall has been settled on the following lines: The London County Council will carry out the undertaking, the cost of which, under the new modified plans, will be considerably less than was anticipated. The Government contributes the site of two houses, which have already been cleared, but the County Council has to buy and pull down two more properties on the opposite side of the road to Drummond's Bank. Negotiations are at present in progress for these. The width of the new road will be 75ft. The whole scheme is already practically put in hand, and will be carried out well before the Coronation, probably by May at the very latest. The Government thus contributes no money at all, but site values; the Westminster County Council gives £30,000, and the London County Council finds the balance. This may not be much more than £50,000. This settlement, however, can only be regarded as temporary and tentative. It will serve to meet the immediate requirements with respect to the Coronation procession; but the question of dealing satisfactorily with the whole area, including Trafalgar Square, will remain open until the authorities acquire sufficient courage and funds to take the more heroic course of materialising a grand opportunity in the grand manner.

Royal Institution Lectures.

ON Saturday last, Mr. T. G. Jackson, R.A., gave the first of a series of three afternoon lectures on "Byzantine and Romanesque Architecture," in the lecture theatre of the Royal Institution. The first lecture dealt more especially with Byzantine architecture. Describing Roman architecture as the parent both of Byzantine and Romanesque, he claimed that it had been unduly depreciated by modern writers, and that the Romans, though far inferior to the Greeks in artistic feeling, had immensely enlarged the scope and possibilities of architecture by their free use of the arch, which adapted the art to the new conditions of life under the Empire. He then described the effect upon architecture of the coming of Christianity into favour—the nature of the early churches founded on the Basilica plan, and the alteration which the Classic capital underwent both in the style of its detail and the addition of the *dosseret*. Mr. Jackson regards the *dosseret* as introduced in order to provide a wider base for the spring of the arches; we think an additional

reason may have been to make allowance for the varying heights of columns which were mostly the spoils from Classic buildings. Mr. Jackson next went on to consider the subject of the dome; the difference between the Roman and Byzantine construction being described, and the theory of the pendente explained by diagrams. The lecturer proceeded to describe the transformation of the Latin church plan into the cross plan with a central dome of the Byzantine architects, more especially illustrated in Sta. Sophia. Mr. Jackson showed how the later Mahommedan mosques had all been influenced by Sta. Sophia, though its example had been copied in a much weaker manner, and with a great deal of monotony. In an eloquent summing up he spoke of the strange and remarkable historic interest centring round Sta. Sophia, and all the various scenes which it had witnessed, and left the audience with the impression that Byzantine architecture at its best really meant Sta. Sophia, and that building alone; an opinion in which we entirely concur. The Italian buildings of Byzantine type, at Ravenna and Venice, will come into the next lecture. The lecture was an admirably condensed recapitulation of the main facts of the architectural history, without a superfluous word.

The Old Bridges.

A plea for the preservation of ancient bridges now threatened with destruction was made on Wednesday last before the Society of Antiquaries by Mr. J. Willis Bund, chairman of the Worcestershire County Council, who said one excuse for altering these bridges was that motor traffic was on the increase, and it was necessary to strengthen the structures lest accidents should occur. The question was how could the bridges be preserved. Some of them were historic monuments, and he failed to see why the Royal Commission on Ancient Monuments should not schedule them, for then there would be difficulty in committing any act of vandalism. He had not a great respect for the Office of Works, but it was better than nothing; and he suggested that before any proposed alteration of the old bridges thus scheduled was entered upon, plans should be submitted to that Office. Then, if any county council or other authority did work without permission, the members who voted for the alteration could be surcharged. Sir Henry J. Howarth, who presided, considered that Mr. Bund's proposal would be effective in preserving their picturesque old bridges. He was a member of the Royal Commission on Ancient Monuments, and always thought that its object was not merely to make an inventory of all antiquarian objects, but to take steps wherever they found wilful destruction going on, and so get the Government to do something in the way of preserving them.

Restoration at Wells Deanery.

Dr. Armitage Robinson, whose installation as Dean of Wells is provisionally fixed for February 24th, is having considerable alterations made at the Deanery, the chief of which is the restoration of the ancient dining hall to its original size. This hall has perhaps for two centuries been partitioned into bedrooms and living rooms, and many of its architectural features have been hidden by lath and plaster. During the alterations there have been revealed several oriel windows containing old stained glass, and a fine Tudor fireplace, which had been bricked up. There is, too, a concealed minstrel chamber at the far end of the hall. The hall, like the chambers above it, had windows on the south as well as the north side, but on the filling up of the inner courtyard most of the south windows were blocked up, and this must have detracted greatly from the brightness of the room. It was probably found in the seventeenth century that the hall was not very useful in a domestic house, and to meet the changed conditions of life it was divided up by means of somewhat flimsy partitions into bedrooms. It is these partition walls which Dr. Robinson is having removed.

LIGHTING FOR SMALL COUNTRY HOUSES.

BY CLYDE YOUNG, F.R.I.B.A.

IT is perhaps somewhat presumptuous to attempt to deal with so large a subject in the limited space of a short article, but it appears to the writer that even a condensed résumé of his own experience in connection with the lighting of a small country house might be interesting to his brother architects, and also useful to the layman, who may at some time have to decide the question how best to light his own home when no public supply of gas or electric current is available.

The chief agents one has the choice of using for such lighting are oil lamps, acetylene, petrol, or air gas, and electricity.

To the use of lamps burning paraffin oil there are many objections, such as the imperative need of daily attention, re-filling of each separate unit, with the attendant mess and trouble, the difficulty of getting servants to trim the wicks properly; and even when oil lamps are given the most careful attention they show a tendency to smoke and smell, the best-made lamps being liable to the creeping of paraffin, which covers the outside of the retainer with a thin film of oil. Added to these objections is the ever-present danger of fire when such lamps are used, caused by their being accidentally upset or broken.

Until comparatively recently, the oil lamp has been the only practical means of lighting a moderate-size country house at anything approaching a reasonable cost, but the improvements which have been made in acetylene, air gas, and electric light plants now bring these within the reach of



A good example of modern leadwork.
PUMP AT SEDDLEScombe, SUSSEX. MERVYN E. MACARTNEY,
F.R.I.B.A., F.S.A., ARCHITECT.

most people; so that, in making a selection, as long as the lease of the property warrants the necessary capital expenditure of putting in either a gas or electric light plant, the owner is not likely to give oil-lamp lighting his serious consideration.

With acetylene or petrol gas it is more difficult to decide which to use, as the generating plants of both systems are now so simple that any gardener or odd man should be capable of working and looking after them.

Acetylene.

The plant for acetylene gas is rather cheaper than that for air gas, but the cost of producing acetylene gas is higher, light for light, than that of air gas, the former being about 11d. per 1,000 c.p. hours, while air gas costs about 2d. per 1,000 c.p. hours. In both cases pipes of small dimensions are used; and as it is a searching gas, the workmanship throughout must be of the best, and the fittings of superior quality. Copper should on no account be used in any position in which it might come in contact with acetylene gas, as, in the presence of moisture, copper acetylide, a red precipitate, is formed, which is liable to explode when heated or struck.

Acetylene gas is rich in carbon, and this is easily deposited at the tip of the burner, and causes smoking; it is therefore most important that the burner should be kept clean, and that taps and joints should be periodically greased and ground in, otherwise a slight leak will occur, and considerable inconvenience be caused by the unpleasant smell from the escaping gas. The generating plant ought to be in a house by itself, well ventilated, and provision made against freezing of water used in generation. No artificial light should on any account be allowed in the generating house except an incandescent electric lamp—any switch, fuse, or storage battery should be outside.

Explosions (which certainly have been more common abroad than in this country) have frequently been found to have taken place when the pressure of the gas was over two atmospheres.

It may be useful to note that acetylene gas has a far wider range of explosibility than coal gas, the limiting percentages, as determined by Prof. Vivian B. Lewes, being 3.82.

Petrol or Air Gas.

The manufacture of petrol or air gas is now quite as simple as that of acetylene gas. The various systems employed all depend on the generation of a mixture of petrol vapour with air in definite proportions, the air being passed through suitable apparatus and carburetted with the illuminating gas. The main essential quality of all the systems is that the mixture generated should, at the burner, contain a small proportion of petrol vapour mixed with air, and that the composition of the mixture should be automatically controlled, so that it does not vary. The gas so manufactured contains 98 per cent. of air and 2 per cent. of petrol vapour.

The necessary plant is small, and takes up very little room, the floor space required being about 4ft. by 4ft.

The machinery for regulating the supply is worked either from the domestic water supply or by the falling of a weight, and is so regulated that when no gas is being used the machine stops and none is manufactured; but as soon as a burner is turned on, it automatically commences generating gas. The advantage of this gas is that it is cheap, non-explosive, and the odour is not unpleasant, but it is at the same time distinctly perceptible, enabling cases of escape to be easily detected.

It is claimed that, owing to the small amount of petrol vapour mixed with the air, the products of combustion are less poisonous than in the case of ordinary gas, and that it can even be applied to the lighting of greenhouses.

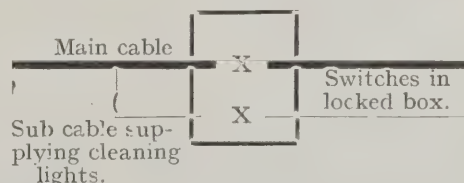
Electric Lighting.

An electric light installation requires greater space for the plant, and is rather more costly than putting in acetylene or petrol air gas; this, together with the fear that electric light means complicated machinery, requiring constant and expert

attention, undoubtedly deters many from adopting it. The simplicity and reliability of the modern oil engine, however, together with the vast improvements made in the manufacture of the metallic filament lamp, with its increased illuminating power and greatly reduced consumption, render this fear groundless. From the experience gained with several small plants of about 70 lights, the writer does not consider there need be any anxiety as to mechanical breakdown, costly renewals, heavy running expenses, and high wages bills. The approximate cost for fuel should average 1s. to 1s. 4d. per lamp per annum, while a complete installation up to 100 lights, comprising small combination set, switch-board, battery, and wiring, can now be obtained for about 65s. per light.

Under these conditions, the question of adopting electric light is an important one, and requires careful consideration, especially when its numerous advantages are taken into account—viz., cleanliness, absence of heat, ease of control, and adaptability for purposes other than lighting, such as vacuum cleaner in house, working churn and separator in dairy, lathe or other tools in workshop, charging hand-lamp accumulators, etc. Lights which are placed at entrance gates and along the drive are also easily arranged, and can be controlled from the house, thus avoiding the necessity of servants having to go out in bad weather to light them. A plant of which the writer has personal experience comprises a 4 h.p. Hornsby Ackroyd oil engine, with belt driven dynamo 30 ampere capacity at 50 volts, with an accumulator of 28 cells—i.e., 25 and 3 spares. This plant has been in continuous use for five years without any breakdown. The battery has been cleaned once, and the plates were found in good condition. The only renewals during that time have been a new vaporizer which cost 30s., and the sole trouble a choked jet, which occurred soon after the plant was installed, and was due to it not having been properly cleaned. The plant is run and looked after by a motor driver who is not by any means a brilliant mechanic, and had no previous knowledge of electricity. Another, and somewhat larger, plant, which gives equally good results, is in charge of a gardener. The important points to be remembered if a good result is to be obtained are first, that a thoroughly good plant be put in and the workmanship throughout be sound and efficient, that ordinary care is taken to carry out the maker's instructions for running the plant; second, the engine and dynamo must be kept perfectly clean and well lubricated; third, the accumulators should not be worked beyond the capacity advised by the manufacturers and never allowed to discharge beyond the minimum given, usually 1185; fourth, if the light is out of use for any length of time, the accumulators must be periodically discharged and charged, or if no light is required for, say, 12 months, it is advisable to discharge and empty the battery, leaving the plates dry.

In many cases where the cost has exceeded the average the writer has found this to be due to the excessive load in the mornings caused by the servants switching on all the lights in a room when cleaning, and not switching them off again when proceeding to another room: in consequence the whole of the lights on the ground floor are frequently found to be on at the same time; to prevent this it is a simple matter to arrange for, say, two lights in each room to be taken to a separate fuse board, supplied by a subsidiary cable, connected to the main cable after entering the house but behind the main switch,



the switches for both the main and subsidiary cables being placed in a locked box, thus enabling the person in charge to control the number of lights available for use in the mornings.

PROF. LETHABY ON GREEK ARCHITECTURE.

At the meeting of the Architectural Association held at No. 18, Tufton Street, Westminster, on Monday, February 6th, Professor W. R. Lethaby read a paper, from which extracts are given below, in which the aim was "to attempt a general survey of the origins and characteristics of Greek architecture."

PROFESSOR LETHABY said at the outset that although he intended to be frankly historical, he nevertheless believed that all these historical studies might be dangerous to those who would actively follow modern architecture, which he conceived of as masterly structure with adequate workmanship. But we have to keep every faculty alive, and we desire not only living architecture, but the most perfect understanding of history.

Continuity.

Having passed in review the results of successive explorations on Greek soil, and having discussed at some length the origins of Greek architecture, Prof. Lethaby said he felt that Greek art is Agean art in a second phase, as being of the same land and in the blood of the people, both by a real continuity and by a revival—a revival, that is, which was a spontaneous borrowing from the past, as Romanesque was a revival of Roman.

Greek Plans.

All architectural planning is developed from the construction of primitive dwelling-huts. Such structures branched off into the tomb and again into the temple—the tomb was the dwelling of the dead, the temple was the dwelling of a god. The dwelling house became complex in adding cell to cell, but the Greek temple remained a glorified hut, a simple cell. Temples hardly appeared outside Egypt before about 1000 B.C.

The circular plan, which attained its final power in that mighty crown, the Pantheon, very probably had a continuous history. Even the basilican form of plan may have a much remoter origin than has been supposed. Thus, Dr. Evans has found at Knossos a hall of the Royal Villa which is described as "a pillared hall about 37 ft. long by 15 ft. wide."

Walls and Masonry.

Early walling was of crude brick or rubble strengthened by beams and posts of wood. Burnt brick is found in Crete. Fine ashlar masonry was built in Crete at least 2,000 years B.C. The inferior walls were covered with plastering. The early type of masonry usually called polygonal was occasionally continued in later times, very accurately executed. The walls of the little temple at Rhamnus were of this kind, and the thick marble slabs of the sixth century temple at Ephesus was quite a crazy patchwork. In fine square ashlar the bedding and jointing became so accurate that the joints could hardly be seen. All such masonry was put together without any cement, but stones were linked together by metal cramps and dowels. Later cramps are of the form of a rolled iron girder; earlier ones resemble the letter Z if it is bent a little so that the turns are at right angles.

Walls were completely dressed down after erection, and the fluting of columns was then done. This was probably a later custom, for the walling stones of the sixth century temple at Ephesus are slightly chamfered all round. Stones were frequently hollowed out at their back so as to reduce their weight. In this way ceiling beams and lacunars were considerably

lightened. A cornice stone from Xanthes in the British Museum is an example. The lacunaria or masonry ceilings were formed of thick slabs, with a series of square coffers dug out of them. In the Museum and other places the squares were pierced right through, and little covering pieces like tiles were set in rebates. At Bassæ the coffers are not square, but in various proportions of lozenges. At Priene and the Mausoleum there was only one big coffer to a columniation, and it was reduced by a series of oversailing margins to a panel of fair size.

Plaster and Painting.

If temples were not built of marble, and comparatively few were, the masonry was covered by a thin coating of very fine plaster rubbed down to a smooth face to take the painting and gilding. Plastered temples were fully coloured with washes and ornamentation. Marble temples were part coloured and picked out, illuminated as it were. The triglyphs were usually a bright blue, also the cornice blocks above; the spaces between the latter and the bands were full red; lacunaria were usually blue, with a gold star, and so on. The margins and mouldings had delicate little frets and honeysuckle patterns. Even the figure sculpture was heightened with gilt bronze and painting.

Mouldings.

Greek mouldings were very few. There is the ovolo or echinus of the capital, and a similar roll or cushion which seems to be an essential part of a base. The Egyptian cavetto is found in terra-cotta roof-casings of an early date. The most curious moulding when seen unadorned is the hawk's beak, but it was always painted into a series of petals: the beak part is formed by the turned-over tips of the petals. The carved egg and tongue moulding had its origin in the same idea, it represents a series of petals turned out and down. Then there is the elegant Lesbian leaf moulding, always painted or carved with a row of leaves, and finally the cyma recta, a moulding first used for the gutter of the Propylæa.

Casings.

Besides the main line of development into the mature marble architecture of the fifth and fourth centuries, there must have been several collateral traditions arising out of wood and crude brick construction. At Sparta there was a shrine plated over with bronze plates, doubtless on a wooden framework. Mud bricks continued in use all the time, and are still used in the East. Even in the days of Vitruvius, brick meant sun-dried clay, although burnt brick had been used in Egypt and Crete, and roofing tiles had been fired from an early period. This use of a material not impervious to rain seems to have led to the sheltering of the side walls by spreading the roof on to an external colonnade, originally a row of wooden posts. The walls were also plastered. A further step with this type of building was to extend the use of casings like the burnt tiles of the roof. The early temple of Thermon had its metopes of painted squares of tiles; and painted tile casings for the cornices and pediments

had an enormous vogue in Greece, Sicily, and Italy. I may remark here in regard to Italy that the tile-cased type of building found there and usually called Etruscan is only a distant wave of the Greek impulse. A very fine example may be seen in the terra-cotta gallery in the British Museum, of casings which were evidently nailed over timbers. The use of these terra-cottas covered with elaborate painted patterns was later taken over into stone architecture, and remnants of them have been found on many sites.

Stairs, Windows and Doors.

In the Palace at Knossos there is a staircase rising in five returning flights. At Silenus the temple has a spiral turret stair. Careful drainage works were executed at Knossos with socketed pipes, and excellent inspection traps of the fourth century have been found at Priene. Ample evidence for large windows divided by mullions has been found in Crete. There are windows of the fifth century in the Propylæa at Athens, and some delicately ornamented fragments of window architraves from the Erechtheum are in the British Museum.

Pillars, Cornices, and Caryatides.

The Greeks restricted themselves in the main to two types of columns, but there was much freedom in the use of them. In the Propylæa built in the fifth century, directly after the Parthenon, both kinds were used. There was something of the sacred and of personality in pillars, and there may be a half-memory in the notion of Vitruvius that the Doric was male and the Ionic female. Or the Ionic may have been taken over at a later time than the Doric from a wooden original. Or, again, the Ionic columns may have been developed as an isolated pillar only to be adopted into temple architecture later. The traditional Ionic entablature consisted of architrave, or beam, and projecting roof, that is the cornice; it had no frieze.

A few years ago it was thought that the caryatide supports at the Erechtheum were a freak of design, but they were in use in the sixth century, and probably had even then a history, for the further we go back the nearer we get to a time when statues and pillars coalesce, and when the pillar was itself a sacred thing.

Acroteria, Roofs, etc.

Another very curious architectural member is the acroterion, which was set on the gables, sometimes one and sometimes three. These were not late ornamental additions, but they seem to have been essential and important features from an early age. Primitive builders seem to have made much of the point of the gable by crossing the rafters, or by setting there some animal's head. The developed form is usually much in the shape of a lyre with two strong horn-like branches, one on either hand, turning into scrolls and palmettes. It seems possible that they may derive from horns of consecration.

Roofs were either covered with tiles, that is, large pantiles with covering rolls, or by marble copies of the same, wrought and adjusted with amazing precision. They either dripped along the eaves, or they were turned up at the bottom into a sort of low parapet, later the cymation, having at intervals jutting spouts like toy cannon, or lions' heads with open mouths. There were hip roofs at the Propylæa.

Variety.

In the later period of the fifth century the aim after a perfect type led to standardising arrangements and forms and endeavouring to perfect them along a very straight line. But before the fifth century there are very wide variations in even the simple Doric type. In the architecture of Ionia variation of detail was aimed at in the same building. In the sixth-century temple of Diana at Ephesus all the base profiles are separately designed, the shafts have different numbers of flutes, some being even narrow and wide alternately, and the Ionic capitals are varied like those in a Gothic church. In the much later Apollo temple near Miletus there is a similar intentional variety of details. At the end of the fifth century black stone was used for the plinths or friezes in contrast to the rest of the walling. At the Erechtheum, sculptured white figures were pinned on to the black background.

here we have something tangible, if subtle. These modifications may be used to bring about unity. If the eight columns of a portico incline towards the axis and there is some adjustment in the spacing, you do not have one factor repeated eight times, but together they make up one whole thing—a portico. Curvature of lines again furnishes an intermediate between the straight and the rounded, between cornices, columns, and sculptures. It takes off the hardness, as we should say. It will correct any look of sagging in horizontal plans, and it varies the lighting on surfaces. Such adjustments are most natural in a highly refined school of architecture.

Conclusion.

This mysterious Greek architecture was but one customary way of doing buildings, after all; and recent researches have shown that in origin the forms are barbaric and accidental—accidental, that is,

the Propylæa, which he measured with a foot-rule. With regard to the latter building, it was interesting to note the substance which covered the stone to a depth of rather less than one-sixteenth of an inch. He spoke about this to Schultz and Barnsley, who were at Athens at the time, and learnt that Greek buildings were polished by slave labour. Mr. Bolton then referred to the model of the Parthenon at the Crystal Palace. This model contained all the curvatures and refinements that existed in the Parthenon itself. That grandeur which they saw in the model they would realise ten times over by personal inspection of the actual building. There was some subtlety that gave it so impressive a character. St. Peter's, Rome, produced comparatively no impression at all.

Mr. Henderson, seconding the vote of thanks, said that Professor Lethaby had



Photo: Thomas Lewis.

NORMANBY PARK, LINCOLNSHIRE: BOUDOIR. WALTER H. BRIERLEY, ARCHITECT.

Proportion.

There is no doubt that the Greek builders delighted in setting out their buildings and their several parts in dimensions which had relations one to another. As the building was to be perfect every part was related, in theory, to every other part, and a unity was supposed to result because accident was excluded. The real proportions of a structure were, of course, determined by tradition, purpose, cost, situation, and materials. The rest was a slight modification superimposed afterwards, a getting rid of the half-inches, as it were. But any hope of solving the question, as the idea of looking for such proportions has been a most disturbing factor in the study of Greek buildings.

Curvature.

It is quite different with the modifications by curvature and other adjustments;

in the sense that with other conditions they would have been different. There is a little æsthetic mystery about the mud walls and wooden props which became a cella and peristyle, or in the overhanging eaves which became a cornice. The wonderful thing is the Greek spirit, and if we would share that we should concern ourselves with perfecting stock-brick walls, chimneys, and downpipes rather than in designing pseudo-dipteral peristyles and Doric triglyphs—that is, as builders—as scholars, let us know all that may be known.

DISCUSSION.

Mr. Arthur T. Bolton, proposing a vote of thanks, said what must have struck them all was that Professor Lethaby had rewritten the history of Greek architecture. He (the speaker) had spent only a fortnight in Athens, where he had confined himself to the temple of Nike Apteros and

mentioned the temple of Diana, and had made special reference to the craftsmanship. The marble pavement was polygonal, and under the plinths of the columns the marble was in larger slabs. The production of the egg-and-dart was quite simple. The flutings were curved over, the edges cut off, and the dart thus obtained. The egg could be produced by the simple impression of a spoon.

Mr. Theodore Fyfe contributed a few remarks upon the planning of Knossos, and Mr. Gerald Horsley observed that Professor Lethaby had gathered the threads of history into one delightful piece of woven work, and had cleared up many points that had proved puzzling in the past. With regard to the covering of stone buildings with plaster and paint, was this quite suitable to our Northern clime? He doubted whether white buildings would look so well here as in the South. Greek

building, as Professor Lethaby had pointed out, was essentially common-sense building; and all English architects who were worth anything at all should treat building from the natural standpoint.

Mr. Walter Millard said that the lecture, useful and entirely interesting as it was, should be chiefly valuable in stimulating them to learn for themselves.

Mr. Arthur Keen agreed with this view, and referred to the time when he had the advantage of being associated with Professor Lethaby in his travels abroad. Professor Lethaby had always been most thorough and painstaking in his studies, and had confined himself exclusively to some particular architectural feature until he had thoroughly mastered it.

VARALLO, ORTA, AND VARESE.

At a general meeting of the Leeds and Yorkshire Architectural Society held last week, Mr. F. C. Eden read a paper on "Varallo, Orta, and Varese," three small towns situate amidst the romantic scenery of the Italian lakes of Como and Maggiore. The connecting link between these places was, he said, that each possessed a noted sanctuary in its Sacro Monte or Holy Hill—a wooded slope dotted with chapel-like buildings, imparting a character of architectural romance to the whole mountain side. These chapels were erected with the idea of reproducing the sacred chapels of Palestine, and were not built for religious func-

their principal heads—fluvial, lacustrine, and marine. He described the characteristics of each of these classes, and the chemical and mineral composition of brick-earths, giving analyses of some typical clays. Mr. Buck went on to describe various methods of manufacture. He ventured suggestions on some of the scientific problems that at present confront the manufacturer in the process of drying and burning. He also gave an interesting description of two principal kinds of kiln. In the finished product, continued the lecturer, strength, durability, and appearance were of prime importance, and of these probably durability was the most desirable. Mr. Buck was of opinion that colour and effect were best left to the taste and



Photo: Thomas Lewis.

NORMANBY PARK, LINCOLNSHIRE: BEDROOM. [WALTER H. BRIERLEY, ARCHITECT.

Professor Lethaby, replying to a question concerning the relationship between the Indian and the Grecian egg and dart, said that there was a strong general Greek influence over India, especially on the north-west frontier, where Greek detail was taken up. When he referred to plastering he did not use the word in its modern sense, nor did he necessarily mean what is commonly called plastering. What he did want for our buildings was a film of some kind that would act as a skin. A close relationship between Egypt and Greece had been propounded 60 years ago; but it was then pointed out that a very long gap occurred between the two. Ægean work filled this gap; and we had an example of work of the 15th century B.C. existing on Greek lands.

Mr. H. W. Cashmore announces that his connection with the Bromsgrove Guild has been severed. Further particulars will be found on page v. of this issue.

tions, but solely to shelter groups of painted life-size figures forming tableaux of the Redemption story. By means of a series of views the lecturer showed that these small buildings, although hitherto almost unnoticed and the work of obscure or unknown architects, were of absorbing interest, regarded as items in the Renaissance development, much of their detail in fresco and sculpture being worthy to rank with the best of its period.

THE MANUFACTURE OF BRICKS.

Before the Sheffield Society of Architects and Surveyors, a lecture was given last week by Mr. W. G. Buck, Licentiate of the R.I.B.A., on the subject, "Bricks and Brick-making Material." After dealing briefly with the geographical distribution of brick-making materials, Mr. Buck gave an outline of the nature and causes of the various deposits, and classed them under

skill of the architect. In conclusion, he referred to bricks as being amongst the most important materials that architects and engineers were called upon to use. It is therefore gratifying to find that professional men are apparently paying increased attention not only to the selection but to the details of manufacture of bricks.

OUR PLATE.

The new building for the Anglo-American Oil Company which has been erected on a site at the western end of Queen Anne's Gate, Westminster, with an extensive frontage to St. James's Park, is one of the most important business buildings of its kind which have been erected in London. The façade to St. James's Park is shown by the Centre Plate in this issue. The architects were Messrs. Ernest Runtz, F.R.I.B.A., F.S.I., and Son, of 64, Victoria Street, S.W.

THE SO-CALLED "DISTANCE POINT" IN PERSPECTIVE.

The subject of perspective drawing being of much interest to architects, we publish below a letter relating to the review of Mr. Storey's book, and our reply.

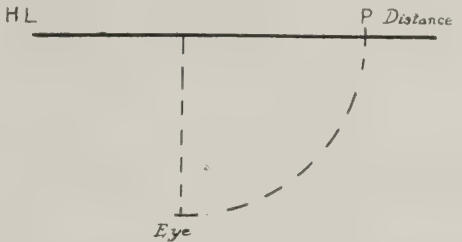
To the Editor of the Architects' and Builders' Journal.

SIR,—I have been much interested in perusing the article which appeared under the heading of "A Royal Academician on Perspective," in your issue of February 1st. I have gathered from this, both from its quotations as well as from its criticisms of Mr. Storey's book, that perspective is a subject no better known to the architect in general than to the painter in particular. I am able to agree with all the remarks of the writer with reference to certain portions of Mr. Storey's book, and also his criticism of perspective books in general, but I am quite unable to follow him through his affected precise dealing with the placing of the point of distance: because, in the first place, he has himself so hopelessly confused the function of a distance point with that of a vanishing point; and, in the second place, by reason of the fact that, in recognising the ingenious nature of Mr. Storey's suggestion for overcoming the inconvenience of an inaccessible "distance point," he has shown that either Mr. Storey or his critic, or both, have here confused the same distance point with what is in reality an inaccessible measuring point.

A glance at Fig. 6 of his own diagrams will further explain what I suggest in my first contention. The diagram is obviously intended, apart from its nomenclature, to show the vanishing of the sides of a parallelogram when put into perspective, viewed under certain conditions. The parallel sides of the parallelogram are shown converging to their respective vanishing points on an assumed horizon line. The writer is perfectly correct in his description of the method for finding these points, but these points when found are vanishing points, as their use implies, and are not "distance points." The writer's definition of a distance point then would possibly in a measure be correct, if it be taken as applying to a vanishing point and not to a point of distance. The points of distance have in reality nothing to do with vanishing points, excepting as in the case instanced from Mr. Storey's "Rules of Perspective," which refers to a distance point found by a line drawn at 45 degrees from the spectator's eye to the horizon line. The point of distance in this case would coincide with the vanishing point of horizontal lines receding from the picture plane at an angle of 45 degrees, but it is still a vanishing point, just as any other point on the horizon line might be, whether at 45 degrees from the eye or not.

The meaning and finding of a distance point can probably be better understood from the suggestiveness of the term itself than from anything said by way of elucidation by Mr. Storey's critic. The distance of the point of the eye from the picture plane (as is elsewhere shown in the article) is a distance assumed by the perspective worker himself for the sake of effect, and for his own convenience in working. But when once assumed, it remains so fixed throughout the whole of the perspective drawing. The distance taken account of in the finding of a distance point is the

perpendicular distance of the eye from the vanishing line (or horizontal line in this case), and the distance point is found by setting off this distance along the vanishing line, from the point in the vanishing line perpendicularly opposite the eye. By reference to the diagram below it will be seen that, as I have previously pointed



out, the distance point here would coincide with the vanishing point found by drawing a line at 45 degrees from the eye to meet the horizon line.

There may be any number of distance points in a perspective drawing, according to the number of planes and vanishing lines dealt with, but there can only be two in each vanishing line, and they occur at equal distances to left and right of the point in the vanishing line perpendicularly opposite the eye, and found as I have previously described.

In my second contention, which has reference to the facilitated dealing with an inaccessible "distance point," the writer has utterly confused the distance point with what is in reality a measuring point. The point under discussion is shown, in his diagram Fig. 7, by name as "distance point," but it has been employed for measuring from the corner (b) along the line (b s,) a perspective distance (a o) equal to the geometric distance (b a). The distance (b o) is measured perspectively equal to the length (b a), because (if drawn correctly) the line (a) passing through (o) is drawn in the direction relative to (b a) and (b o), so that it shall lie

between them as the base of an isosceles triangle: thus measuring (b o) equal to (b a). The point in the horizon line to which the line (a o) is produced is therefore, by reason of its use, known as a measuring point.

I need only say more for the purpose of showing the theoretical basis on which the expediency shown in Fig. 7 is built. It will be seen that the line passing through s and what is here termed the distance point is parallel to the line (b a), and that therefore the triangles—(distance point, o, s.) and (b, o, a) are similar, and that, therefore, if the two lines which are parallel be proportionately and oppositely divided, the lines drawn to these points of division would pass through the same point o: thus showing that this expediency is one for measuring by means of more accessible points, and that therefore, as I have before stated, they are termed proportional measuring points.

W. M. WHITEHEAD.

[We give space to the above letter, but it is only an example of the mere verbiage with which the subject of perspective is overloaded and confused.]

The diagram, Fig. 7, in our article of February 1st, is Mr. Storey's, not ours; it is merely reproduced from his book, and we are not responsible for his nomenclature.

By "Fig. 6" in our article we presume the writer means Fig. 5, as the remarks are not applicable to our Fig. 6 (which also is traced from Mr. Storey's book). If he means Fig. 5, the points to which the lines of the two interiors converge are no doubt vanishing points; we never said otherwise, and, in fact, we called them by no name at all. The writer has apparently confused one diagram with the remarks on another one.

What we wanted to point out is that there is no sense in regarding a "distance point" as a kind of "constant" to be found by drawing a quadrant from the spectator's position to the picture plane. In Fig. 1, below, where a square normal to the picture-plane is shown in perspective, the quadrant curve gives a point which is in fact the vanishing point of the diagonal of the square, and could be found

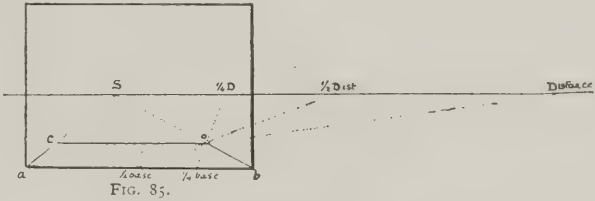
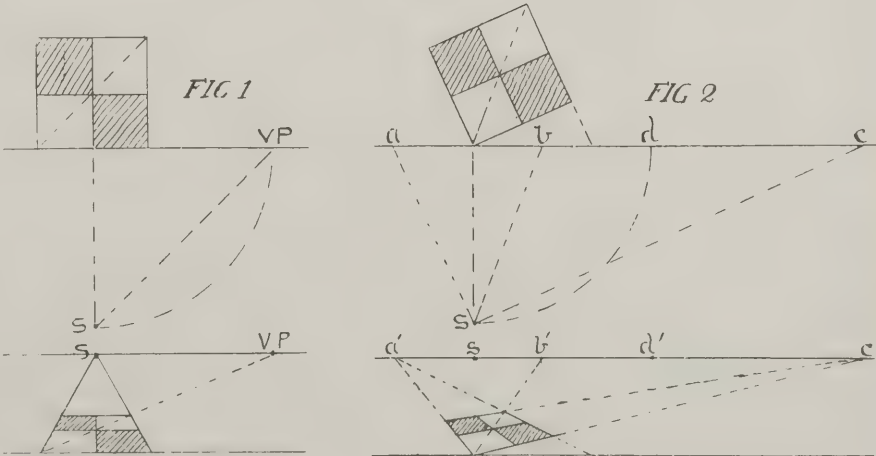


Fig. 7.



equally by drawing the straight line from *s* to *vp*, parallel with that diagonal. But now suppose the square canted to the picture-plane, as in Fig. 2; the vanishing points of the two sides and of the diagonal, at *a*, *b*, and *c*, can be found in the same way, by drawing lines parallel to them from the station-point *s* to the plan of the picture-plane. And now let Mr. Whitehead add his quadrant which cuts the picture-plane at *d*, and which he and Mr. Storey regard as a kind of permanent function in perspective—an ideal “distance-point,” always existing—and tell us what on earth that distance-point (*d'* on the horizontal line) has to do with the formation of the picture. Nothing whatever; it is a point in the air, entirely negligible as far as the picture is concerned. The actual distance of the spectator from the picture-plane is shown on plan. What we want in the picture is the apparent direction of lines in the picture as influenced by the spectator's distance from the picture-plane. What we want for the picture are the vanishing-points of lines; if there are any lines at an angle of 45 degrees with the picture-plane, their vanishing point will, as a matter of fact, coincide with what is called by writers the distance-point; but that is a mere accidental coincidence, there is no essential principle involved in it. The actual measurable distance of the spectator from the picture-plane is shown on the plan, and it is only on the plan that it is of any importance; on the “horizontal line” of the actual picture it is merely one out of various vanishing-points, in most instances (except in the conventional system called “parallel perspective”) less used than any other; and to use language which assumes “the point of distance” to have some special importance in drawing the picture itself is only to lead students to confuse accidentals with essentials. The expression “distance-point” ought in fact to be confined to the plan, and all the points taken on the horizontal line should be called “vanishing-points,” and then we should have more consistency in nomenclature.—*ED. A. and B. J.*

PROFESSOR BERESFORD PITE ON THE BUILDING ART.

At a meeting of the Institute of Builders, on February 1st, Prof. Beresford Pite, F.R.I.B.A., delivered an address on “The Teaching of Building Construction with Architecture.”

Building construction, Prof. Pite said, might be studied not only as a science in itself, but as a doctrine of design—the design being but the expression of essential facts—e.g., the lintel and the arch (the former being the ruling constructional principle among the Greeks, and the latter that among the Romans) are simple fundamental constructional facts, yet are distinctly beautiful forms of design.

The architecture of ancient Greece was exceedingly simple in construction; the practice of their builders going little or no farther than that of the lintel and column; but upon that principle—so subtle and refined was their sense of beauty—they built the whole of the architecture we know as the Classic of the three great orders. This sense of refinement led them to introduce the entasis on the column shaft, the slight camber on the entablature and soffit of the lintel, and the small variations in the spacing of a row of columns so as to overcome the inevitable optical illusions connected with these forms or groupings.

The Romans appeared to get farther than the Greeks in the principles of construction, their great idea being that of the arch. They were masters of massive construction, but, having built their houses, they looked around for someone to furnish them with architectural embellishment. This demand the Greek artists satisfied by supplying the architectural forms or orders slightly modified into a decorative treatment, and ornamental furnishings were supplied by sculptors, artists, and craftsmen.

The Gothic builders of mediæval times were constructionalists first, and artists afterwards; and from the simple semi-circular arch of the Romanesque they advanced to the complicated forms of arcade and vaulting, of which the Chapel of Henry VII. at Westminster is such a notable example. Upon the main lines of their constructions they worked their artistic ornaments in the deeply recessed mouldings so characteristic of mediæval architecture.

With this view of architecture as the ideal one, it is necessary for architects to keep up to date with constructional developments.

Architecture may be considered, of course, as a purely decorative art, quite apart from construction; and it was so treated by the Romans; and under the same category may be placed the study and veneration of antiquarian architecture simply because it is old; also modern revivalism and some phases of Renaissance Art.

In order that the architect should work successfully and practically in the detail of his work, it is needful that he be intimately acquainted with the nature and qualities of the materials he proposes to use, if not the actual craftsmanship required to manipulate them; but Professor Pite protested that he was not one of those who would advise architectural students to follow any prolonged course of study in brickwork, masonry, or metal working, because the result of such study cannot fail to be otherwise than destructive of the finer powers of handling the pencil for purposes of design. Nevertheless, a practical knowledge of the crafts cannot be otherwise than beneficial to the designer, who should always work on sympathetic lines with the material.

He then came to the subject of how far it was necessary for builders to study architecture, and how far such a study would be desirable or interesting. Builders are an absolutely necessary part of society, as a country cannot grow without them. The buildings of a nation form a solid record of its development, mentally as well as materially. The bulk of the buildings that are erected in this country are done probably without architects, and therefore without architectural thought or design, from the great factories down to the small speculative houses; and, so far as these are direct, serviceable, and unaffected, they illustrate the architectural age in a simple and effective sense. But education to some extent in architecture will be needed if builders are to cultivate their minds in the direction of the æsthetic—e.g., true proportion, propriety of ornamental detail, etc. To acquire any degree of proficiency in this requires much study and constant practice, with wide knowledge; indeed, it amounts almost to a gift, and it is hardly to be expected that practical builders, with all their multifarious duties, can find time to devote themselves to this branch of the building craft. It is possible, however, to a limited degree. A builder who is always erecting churches, or country farm buildings, or, indeed, any other form of specialisation, cannot do otherwise than become an expert

in the particular line which he practises; and, with general practice, if he keeps his observing faculties well employed, will, as experience increases, acquire a very fair general knowledge of the architectural style of the building he knows best, and the detail proper to it.

Ruskin's view of art, as expressing the enjoyment a man experiences in the execution of his work, stands quite good in regard to such building work, the art being that little margin of pleasure or profit which such a man puts into it after the fulfilment of the more material and prosaic parts of the work.

Education in technical matters is eminently needful to the aspirant for a place in the building trade, but the student soon reaches its practical limits. Professor Pite said that he naturally spoke with great diffidence and hesitation as to recommending a course of study in architecture to builders; but without reserve he would say that a young man should be well grounded in the principles of geometry and freehand drawing, and, in addition, in as much more of the principles of constructive science and decorative art as he can find time to digest.

Technical education equips the hand in order to give expression to the ideas of the mind. Building science and architecture have been divorced far too long in our technical schools. The joiner should be taught not only how to frame up a four-panel door, but what proportion the panels should bear to the whole, and what the shapes of the mouldings may be. Similarly in brickwork and masonry, the student should learn not only how to set out and cut an arch or pilaster, or work a column with cap and base, but how to draw a properly proportioned column or a regular arch, and what shapes of the caps and bases should be in the architectural style which he is illustrating. Progress in technical training has come to the point where more than empty skill is required, and general education on architectural principles will be conducive to good and important work.

If the artisans and builders of the future rise to the occasion and follow the course indicated, cultivating a sense of fitness and beauty in building work, the reproach of cheapness and ugliness will gradually disappear from our modern buildings. It is really absurd, when one thinks it out, and is an evidence of topsy-turvydom in these matters, that saying a building is new is giving it a bad name. New districts should really be more beautiful than old ones, if the general sense of the æsthetic advances.

In conclusion he would say that even if the work you are engaged upon is not beautiful in itself, if you do it well it acquires a beauty by that very act which by its reflex action is of distinct benefit to yourself and all those engaged with you upon the work.

A WATER FILTRATION PLANT.

We have received a very attractive pamphlet dealing with the new pressure filters which Messrs. Mather and Platt, Ltd., of Manchester, have constructed for the Bolton Corporation Waterworks at Sweetloves. The installation here comprises sixteen filters, housed in well designed brick buildings. These filters are of the well-known pressure type—closed steel cylinders, 8ft. in diameter, holding specially graded quartz crystals, after passing through which the water enters the town main purified. The plant is a very efficient one, admirably arranged, and with special means for cleansing the filtering material as required.

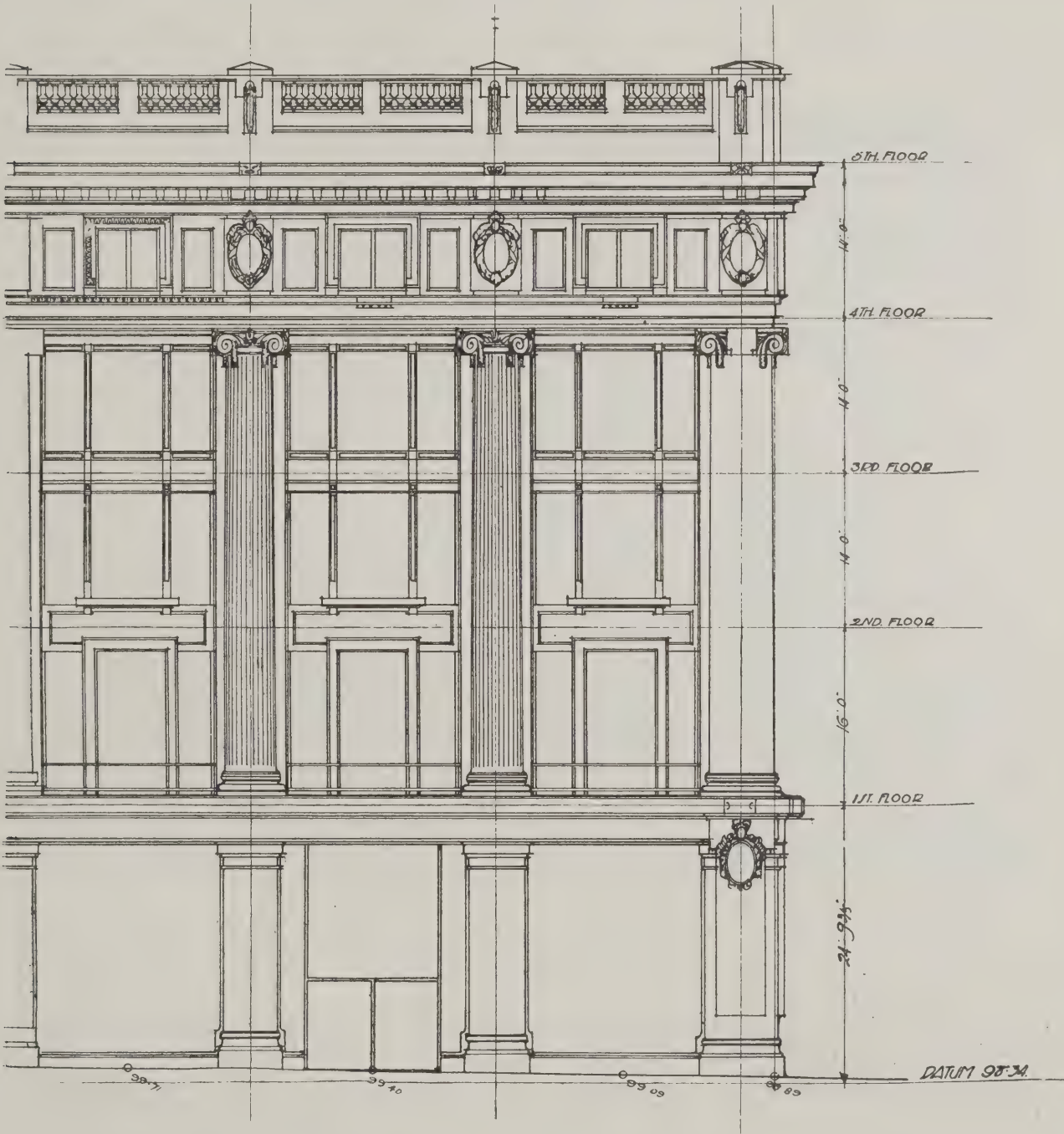
METAL WINDOW FRAMES.

It is very obvious that much of the prejudice against fireproofing methods is due to the supposition that they do not make for beauty. What gave rise to this impression was, perhaps, the uncompromising utilitarianism of the earlier methods, whose promoters naturally laid strong emphasis on the object they had chiefly in view, and in their zeal for fireproofing had but scant regard for appearance. This first crude conception has been gradually but continually corrected, and recent developments show a decided reaction against unsightli-

gressed, there is a very legitimate attempt at decorative treatment, while there is no attempt to disguise the natural characteristics of the material.

The extensive introduction of metal window frames is rapidly becoming a matter of common practice, and examples of such use are found in many of the most important recent buildings. Fire-resistance, economy of window space, and the consequent minimum obstruction of light, are the primary advantages secured. Probably the most striking instance is the Liverpool Cotton Exchange, where

iron, by Messrs. Walter Macfarlane and Co., of Glasgow, and extend with the architectural order through three floors. The shop window frames and entrance on the ground floor are also of cast-iron. This metal proves eminently suitable for work of an ornamental character, and allows a pleasing refinement of detail not always to be expected of cast-iron work. Its adaptability to classic forms is clearly shown, and the three superposed bays impart an effect of dignity and solidity even more satisfying than if these features had been rendered in stone. The contrast be-



BUSINESS PREMISES FOR SELFRIDGE AND CO., OXFORD STREET, LONDON: PART ELEVATION.

ness, and even a movement towards decorative effect. Of course this effort can easily be pushed too far; for ironwork cannot be made "pretty" without detracting from the suggestion of strength which is native to the material, and ought not to be in any way disguised. In the examples mentioned below, the treatment is in every instance appropriate to the material; yet, while the canon of fitness is not trans-

the whole elevation to Edmund Street is carried out in steel encased in ornamental cast-iron. More recent notable examples are the Selfridge Store, and the new building in Regent Street which has been designed by Mr. Frank T. Verity. The accompanying detail drawings show the construction of the large windows of the main front of the Selfridge Store. They are of cast-

tween the two materials in Mr. Verity's building is hardly so satisfactory, the reason being that the windows of the first floor are in stone, and those of the two succeeding floors in metal. The architectural quality of cast-iron, the harmony of its association with stonework, and particularly its fire-resisting characteristics, will considerably influence and recommend its adoption in the future.

FIRE PREVENTION NOTES.

Fire Precautions at Turin Exhibition. The organisers of the International Exhibition which is to be held at Turin next year have wisely determined to do all that is possible to protect the buildings against fire. They have even gone the length of offering a prize for the best means of rendering wood and other naturally inflammable materials proof against quick ignition. It is stated that there was a large response, and that, after due examination of the means put forward, the authorities have adopted two very efficient chemical compounds—one, it would seem, applicable to wood, and the other to fabrics, and so forth. Moreover, all outside woodwork is being covered with asbestos paint.

other watchmen hastening to his assistance. The exhibition will have its own special supply of water, and for this purpose a huge reservoir is being constructed. This can be kept full by means of pumps, even while it is in use; and the contents can be discharged at a pressure of not less than 90 lb. per square inch from all the lines of exhibition hose. In any case of fire quickly getting serious hold of highly combustible goods—and it were idle to pretend the absolute impossibility of such a contingency—the sappers and engineers would be ready with special apparatus for blowing up the affected building, and thus isolating the flames. Any danger from short-circuiting of the electric wires has been provided against by the adoption of

20 square yards, and each provided with counter-weights, by means of which they can be easily and rapidly closed. Around the buildings there is a 16ft. passage, affording facilities for the fire-brigade men to reach unobstructed every part. The Italian authorities had arranged to install twenty-six hydrants here, and to these the British authorities have added thirty more; and there is also to be a direct supply of water drawn from the river by means of two powerful pumps, which are capable of delivering 1,000 gallons per minute.

Structure and Materials. The structural precautions are interesting. The space between the floor-boards and the original level has been tightly rammed with earth, to hold which in place a wall gin, thick has been built to the height of



Detail of metal window frame at first-floor level.

BUSINESS PREMISES FOR SELFRIDGE AND CO., OXFORD STREET, LONDON.

Fire Brigade and Water Supply. The fire-brigade organisation also inspires confidence. The town brigade comprises twenty-six non-commissioned officers and 200 highly efficient men; while the town water service is said to be entirely satisfactory. All over the exhibition area fire alarms are being installed, and at night as many as 1,200 men will be on duty on or about the building, each man being held responsible for the safety of a small area. Hydrants and hose are conspicuous in red boxes situated at points that are in no case more than about 38 yards apart. Any alarm that is given will sound not only in the exhibitions, but in the barracks for sappers and engineers. The watchmen have been specially trained in fire-drill; and the man who gives the alarm will then immediately rush to the nearest hydrant, draw out the hose, and play upon the fire, the

exceptional measures that have been recommended by a committee of experts.

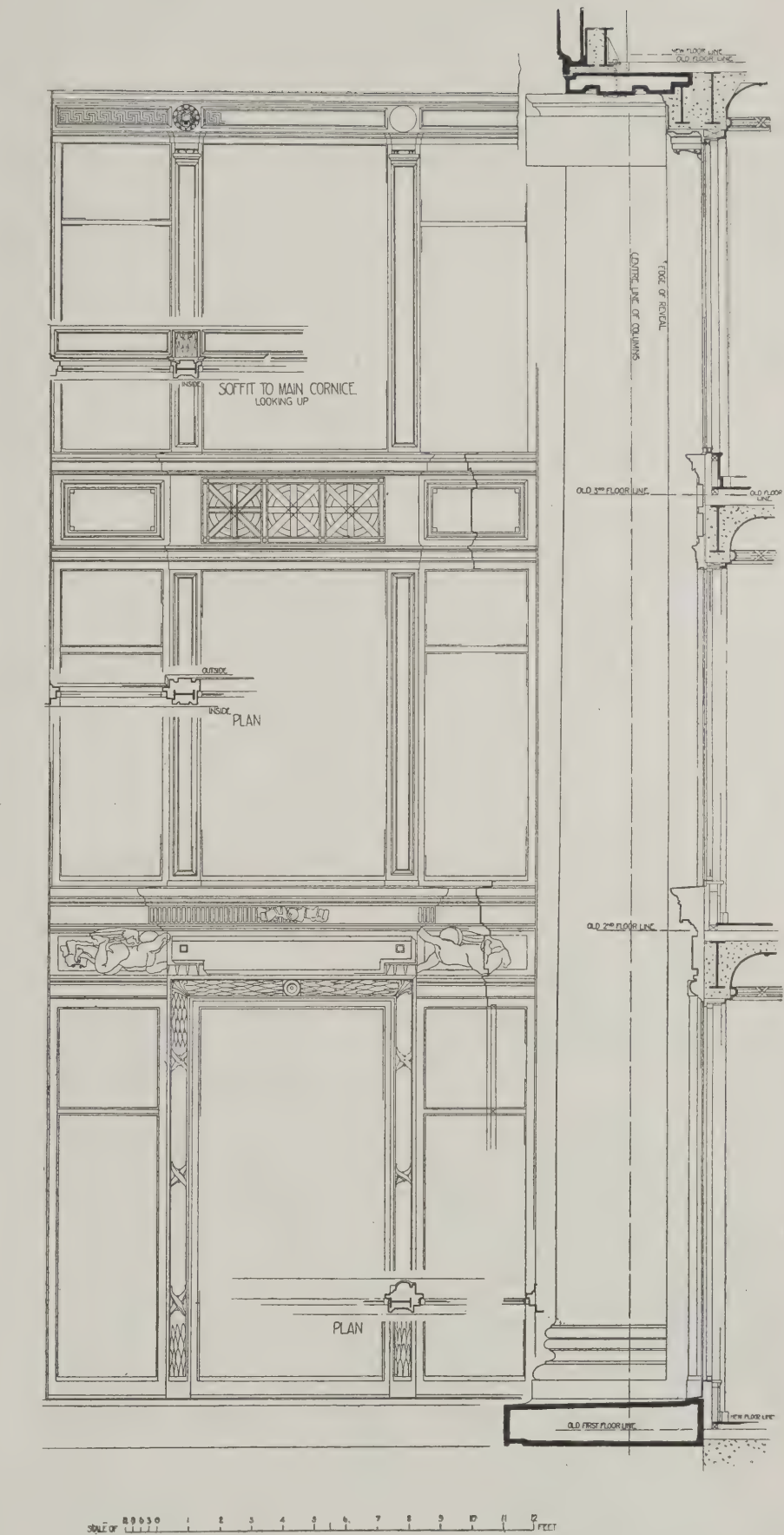
Precautions in the British Section.

Since it was the British section of the Brussels Exhibition which suffered most severely from the fire there, it is not surprising that the Turin authorities seem anxious to address to this country special assurances with regard to precautions against fire. The exhibitions branch of the British Board of Trade is also taking every possible precaution. The building for the British section will be virtually isolated, as it is only touched at a single point of one of its buildings, by the International Machinery Hall; and at this point a fireproof wall, 35in. thick, has been built across the entire 150ft. of contact, and rises 3½ft. beyond the corrugated iron roof. The wall is fitted with six iron doors, each measuring more than

the floor level, round the entire section. Internally, all the walls of the buildings are covered from top to bottom with Frazzi hollow bricks, 1½in. thick, which are covered with a ¾ in. coating of plaster. The pillars are to be sheathed with iron wire bearing a non-inflammable 1½in. coating of plaster. The ceilings throughout will be covered with metallic lathing substantially coated with plaster. The roofs of all terraces are being protected with galvanised iron, the woodwork of all doors and windows is to be painted with asbestos, and the doors in every case are to be fitted with panic-bolts. Besides the precautions against short circuiting, a complete system of lightning conductors is to be arranged. It is evident, therefore, that Turin, profiting by the misfortune of Brussels, is bent on setting an excellent example with regard to the prevention of fire in exhibition buildings.

Fire Protection for Oil Storage Tanks. The difficulty of dealing with inflammable fluids such as oil and varnish is so great that insurance companies are rather inclined to fight shy of the risks that are involved by the storage of such fluids. In one instance—that of a printing ink factory, where the oil used in the manufacture of the ink is exposed to the air for “bleaching,” and where lamp-black is made by the systematic firing of pits—the fire insurance companies, who were consulted before the factory was erected, insisted that the buildings should be upon the isolated block system, and should be of one storey only. This advice was followed, with the inevitable consequence that a large area of valuable space is doing but one-third or a quarter of the duty that the costly site would yield if it were adequately covered. The chief precaution against fire took, at one time, the primitive form of heaps of sand, each with a shovel stuck in the centre, disposed about the yard, ready to be thrown instantly on any outbreak of flame; the idea of extinguishing an oil or varnish fire being regarded as ridiculous. To-day, however, various fire-extinguishing compounds are available; and it would even appear that faith in the power of water to extinguish such fires has been restored; for it is announced that a scheme of fire protection for seven large oil storage tanks has been fitted recently by Messrs. Merryweather and Sons for a prominent oil company in the North of England. The installation comprises a petrol-driven “Hatfield” pump, which delivers water through a series of pipes arranged around the roof of each oil storage tank. A sprinkler pipe surrounds the top edge of the tank, this pipe being pierced with holes spaced at suitable intervals. The inclination of these holes is towards the side of the tank, and when the pump starts the water is forced at high pressure through the holes. It impinges on the surface of the tank at an angle of about 45 degs., and streams down the side of the cylinder, forming a protecting film of water. Should a fire occur in one of the tanks this film of water, with its cooling properties, should form an effective safeguard against the risk of the remaining tanks becoming involved. The supply of water can be controlled to enable the entire output of the pump to be concentrated on to one or more tanks, if desired. Satisfactory results were obtained when the installation was tested over a distance of 500ft.

Two Recent Fires in London almost simultaneously—the one occurring late last Thursday night, and the other in the small hours of Friday morning—were of widely different character, and remarkable in the one case because, in the house at 15, Curzon Street, Mayfair, Lady Crewe had, on the previous day, given birth to a son, and had to be removed to a part of the building more remote from the outbreak; while in the other case the striking feature was the rapid spread of the flames, the scene of the fire being Millwall Dock, where a good deal of timber was stored. In the Curzon Street case, the fire broke out in a room on the top floor, so that the firemen were able to confine it to the top storey; but the greater portion of the roof was destroyed. The brigade behaved admirably, and the fire was well under control in less than an hour. The fire at Millwall was first observed in a small gear-shed belonging to the Port of London Authority, and it soon took hold of a transporter railway, about a quarter of a mile long, supported on



BUSINESS PREMISES FOR SELFRIDGE AND CO., OXFORD STREET, LONDON:
DETAIL OF METAL WINDOW FRAMES.

wooden piers, and used for carrying timber, of which some stacks piled below the line were involved in the destruction, as well as a shed, about 100ft. long, in which timber was stored. About fifty engines were in attendance, and by strenuous and

well-directed effort, they at length succeeded in restricting the fire to a much smaller area than it was at one time expected to encompass. As it was, the damage was estimated at some £40,000 or £50,000.

THE EVOLUTION OF FIRE-RESISTING CONSTRUCTION.

BY WILLIAM WOODWARD, F.R.I.B.A., F.S.I.

In a paper, of which this is an abstract, read at the ordinary general meeting of the Surveyors' Institution held on Monday, February 6th, 1911, Mr. Woodward traced the evolution of fire-resisting construction, and concluded his paper with some useful precautionary suggestions applicable to new methods of construction.

TO the outside observer buildings are now erected—apart from questions of architectural style and taste (or the absence of them)—much as they used to be, but the professional man knows that, to employ a well-known expression, a “sort of” revolution has during the last fifty years or so taken place in fire-resisting building construction.

Early Use of Concrete.

But as early as 1835 we find Mr. George Godwin reading a paper on the “Nature and Properties of Concrete,” and on the architectural treatment of it. He showed how concrete had been used largely as a building material by all the principal civilised nations of antiquity; how Alberti had described walls made of it, nearly in the same way as is done now, by moulding it between boards; how Pliny had described cisterns made of it; and how many of our principal buildings, including St. Paul's and Westminster Abbey, stand upon concrete foundations dating from Roman and Saxon times.

Evolution of Fire-resisting Construction.

The evolution of fire-resisting construction in our buildings cannot be said to be of prolonged growth. It was the knowledge and appreciation of the uses and value of concrete, as much as of the uses and value of steel, which gave rise to that impetus in their combined uses which has culminated in what we know as reinforced concrete construction.

In 1854 architects were keenly discussing the construction of concrete floors, roofs, and walls, and their experiments led, no doubt, to a liking for the material as fire-resisting; as one which would carry very large unsupported areas, and which was cheap.

Many years before 1854 Fox and Barrett's fire-resisting floors, and the various kinds of similar floors as regards fire, were in vogue, and such firms as Homan and Rodgers and Dennett and Ingle were paying great attention to this important subject of fire-resisting construction, and French architects and engineers especially were devoting their labours to the same end; and although the French methods differed from ours in detail, much the same ideas prevailed, except that the French construction was always much lighter than ours—they took greater risks, and yet I have not heard of a case of failure in Paris due to collapse of a floor by reason of insufficient strength per foot superficial.

Early Fire-resisting Floors.

I find an interesting statement made by Mr. Wyatt Papworth, at a meeting of the R.I.B.A. in February, 1854, when the French and other methods of constructing iron floors were under discussion. An obelisk erected in 1776, on Putney Heath, by order of the Corporation of London, commemorated the satisfaction felt by committees of that body with experiments made in 1776, described in a pamphlet, printed in 1785, and entitled “An account of the invention and use of fire-plates for the security of buildings and ships against fire.” The resistance to fire was accomplished by applying the fire-plates above and below the timbers,

with dry sand or rubbish between them. A room was filled from floor to ceiling with fagots and pitch and tar, and the result seems to have been most satisfactory as a protection from fire. The inventor's experiments, however, showed that “the only way to check a fire was to prevent the access of air; for flame would inevitably calcine such materials as concrete and plaster.”

Proving that fifty years ago architects began seriously to consider concrete construction, I find that Mr. T. H. Lewis, on December 14th, 1857, read a paper at the Royal Institute of British Architects on some experiments upon concrete. Those experiments were directed to the suggested sensible loss in bulk of the ballast independently of that of the lime, and showed that the materials, after being mixed together, expand considerably.

A “Novelty” in the 'Seventies!

Then on June 5th, 1871, two papers were read before the Royal Institute of British Architects, with Mr. Edward I'Anson (a Past-President of the Surveyors' Institution) in the chair. One paper was on the use of Portland cement-concrete as a building material, by Mr. Thomas H. Wonnacott, in which he speaks of the “novelty of the material.”

The second paper above referred to was read by Mr. A. W. Blomfield on “Concrete Building.” This paper was confined to the consideration of concrete in walls constructed in situ, by filling concrete into cases or moulds, made to shift to the various heights and positions as the work proceeds. This system has, we know, since been very largely adopted.

Mr. Blomfield confined his remarks principally to the limits which the material imposes on architectural design and decoration. There can be little doubt that forty years ago fire-resisting construction in floors was greatly in favour, and Mr. Blomfield predicts its capabilities in that direction “without any adventitious aid of iron girders or other supports over considerable areas.

Importance of Good Materials and Honest Workmanship.

Mr. Edward I'Anson, in summing up the papers, made one or two useful remarks, which are quite as useful to-day. He was convinced that unless thorough dependence can be placed upon the honest and conscientious execution of the work by the contractor, concrete is a dangerous material to use, inasmuch as a small percentage of inferior material in Portland cement would cause the ruin of the entire work. Mr. I'Anson testified to the great desirability of not using cement too newly made, and mentioned that the Metropolitan Board allowed concrete buildings to be used in London, but insisted upon a considerable amount of iron hoop bond, and would not allow concrete walls of less thickness than brickwork. So that at this date “reinforced concrete,” in the shape of hoop iron bond and concrete, was adopted.

A Mid-Victorian Enthusiast.

Then in April, 1876—with Sir Gilbert Scott, R.A., President, in the chair—a paper was read at the Royal Institute of

British Architects by Mr. Alexander Payne on “Concrete as a Building Material,” and this principally dealt with it ornamentally for the fronts of the buildings so as to avoid ugliness. Mr. Payne observed—and this is an important matter in dealing with concrete and iron combined—that once you bed iron and keep it from the air you entirely protect it from rust and oxidation. Mr. Payne laid it down as an axiom that concrete offers unusual facilities as a material for walls, etc., “from the readiness with which iron or other ties can be embedded in it in any direction to resist any thrust or tendency to separate in the structure.” Mr. Payne showed a design for a street façade in iron and concrete, but I cannot say that it would induce me, personally, to substitute concrete for stone or brick. Mr. Payne would not imitate the projections of stone and brickwork, but would obtain as large wall spaces as possible and as few projections, ornamenting the work instead by indentations, calling to recollection the magnificent ornamentation of the Alhambra and of the Mahomedan buildings of India. Mr. Payne went so far, in his intense admiration for concrete, as to advocate the panelling of the interior of an apartment and “do away for once with the everlasting wall paper,” and he practically described reinforced concrete when he proposed to “use iron embedded in concrete for the purpose of giving tensile strength to prevent fractures caused by thrusts of arches, vaults, etc., instead of opposing them by buttresses as is done in brick or stone.”

Warehouses Gutted by Fire.

The above paper was followed by an interesting discussion. Mr. W. H. Lascelles referred to warehouses gutted by fire, where lintels consisting of concrete with pieces of iron, three inches by a quarter of an inch, embedded in the centre, were not affected by the fire, although the sills and other parts were. The concrete was mixed in the proportion of one of cement to six of breeze. Mr. P. Brannon was a great believer in iron and concrete, and he made window heads by bedding rods of angle-iron and dispensing with any framing or bresssummers. He had then put in concrete doors in St. Paul's Cathedral, under Mr. Penrose, “in order to render fire-proof that portion of the dome to which the public have access.” Mr. Brannon had then built some cottages in Derbyshire where the concrete walls were made with the “slag of furnaces ground with selenitic lime,” the compound being “nearly as good as Portland cement concrete.” Mr. Drake, at the same meeting, was most earnest in his partiality for concrete in floors, roofs, and staircases, and he asserted that good Portland cement concrete, or good selenitic concrete, or good lias lime concrete, correctly treated, “will never either contract or expand in the smallest degree after having once set.” Mr. J. Tull stated, at the same meeting, that slag from the blast furnaces was an excellent material because it is easily crushed and furnishes in the crushing a sharp grit. He did not approve of iron in concrete floors. Mr. Aitchison was desirous that experiments should be tried with and without the iron, “to show whether any or what additional strength is gained,” and Mr. Arthur Cates made some interesting references to the work of Mr. Brannon by which the cupola of St. Paul's was made fire-resisting.

“Fire-resisting,” Not “Fire-proof.”

It will be observed that I have generally used the term “fire-resisting” instead of “fire-proof,” as examples of large fires

prove that at the present moment there is nothing which has been invented to make a building "fire-proof." The most we can do is so to construct our buildings as to minimise as much as possible the risk from fire and smoke.

The London County Council General Powers Act, 1909, now enables skeleton-framed structures to be erected, at the same time permitting the reduction in the thickness of external walls in force under the Act of 1894; and so far as I have been able to judge, the anticipatory objections to the provisions of that Act have been modified, and it seems to work well and does not entail those delays and interferences which some members of the profession thought would be likely to arise.

Before coming to the most modern of fire-resisting constructions, viz., "Reinforced Concrete," I propose to say a few words on other methods. There are the plain and simple rolled iron or steel joists, some three feet apart, filled in between with concrete or breeze and Portland cement. These demand centering, and at times trouble is caused by the exudation of moisture just when it is not wanted.

Fire-resisting Floors.

One of the early floors, which still holds its own, is what is known as "Dennett and Ingle's." The steel joists are from 4 ft. to 10 ft. apart, according to the particular form of construction, in some cases the concrete is with arched and in others with horizontal soffits. Each method lends itself to either joists on plates bearing on the concrete, to wood block flooring, and to soffits either plastered on the concrete direct, or with ceiling joists and lath and plaster in the usual way. The material is concrete composed of highly calcined

gypsum and broken brick, or of Portland cement and an aggregate of broken brick and gravel.

We then get to the various forms of fire-resisting floors consisting of brick or tile arches between iron or steel joists; different forms of terra-cotta laid on the joists and carrying concrete, such as the Frazzi floor—all doing away with the necessity for centering—which is an important matter, not only on the ground of expense, but from the fact that centering keeps back moisture and rather lends itself to careless filling in on the part of the workman. The terra-cotta of these patent floors is made so that it can easily and accurately be laid in lengths between the steel joists and the soffits plastered afterwards. These floors are being made—and the system is also much used in partitions—so that nails can be knocked in the terra-cotta without enlarged fractures. I think also that they are as fire-resisting as could be wished.

The perfection to which cast-iron stanchions are now brought, and the enormous weights which they carry, leads one to question whether their continued employment is not superior to steel as regards weight in compression, and that, combined with ordinary steel joists, with either one of the patent floors or ordinary concrete filled in, to my mind brings us as near the perfection of fire-resisting construction as we can hope to attain.

We have all had to do, too, with wood floors, and there are still men left who would prefer—in cases of big fires that have got strong hold—a solid wood floor to all the steel and concrete floors ever invented. Some years back experiments were made with solid wood floors, i.e., wood joists of the usual scantlings, laid close

together, side by side, and I think the result of such tests was that these floors would stand concentrated heat better than the steel and concrete floors. I remember watching a fire, some years ago, where the building had a canted angle, and the supporter at each point consisted of a fir post 9 ins. by 9 in. The building was completely gutted, but the fronts were intact, due, I think, to the wood supports, which stood the fire well, and when I inspected them the following day I found that their centre parts had been consumed to within about 3 ins. I doubted very much whether steel stanchions or iron columns would have been left to tell the tale. We all know, too, that the most deceptive fire-resisting material is stone or granite in staircases, and stonework generally, brickwork and concrete being far more reliable.

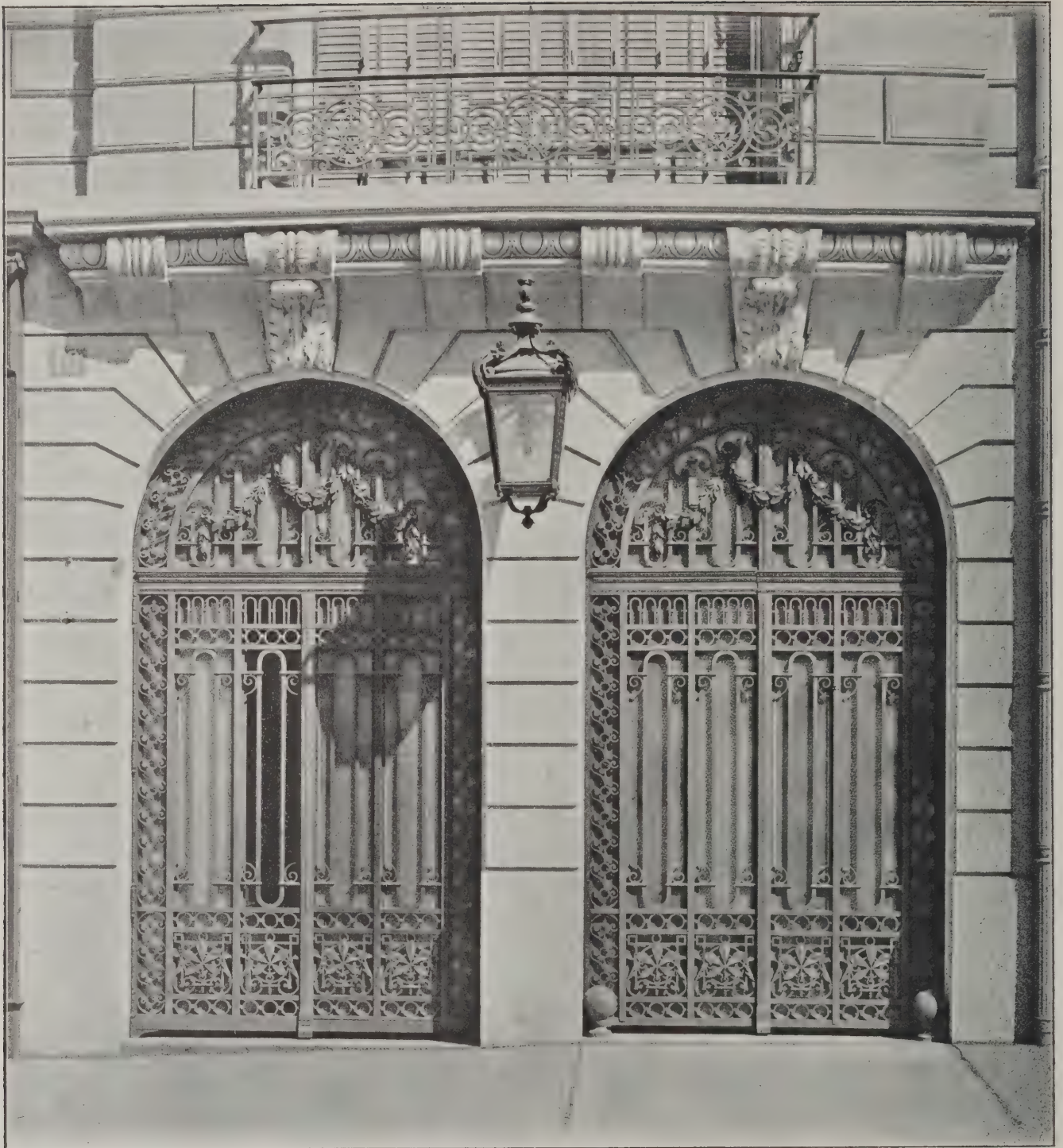
Importance of Fire-resisting Construction.

The evolution, though, of fire-resisting construction in the form of reinforced concrete may be termed a revolution, because not only do we get it in floors and walls, but in piles and girders.

That too much care and attention cannot be given to any form of construction, or the employment of any material which will minimise, if not abolish, the risk from fire, goes without saying; and it is this dread of fire in buildings which necessarily alarms those upon whom falls responsibility in case of death or injury from fire. Recent occurrences in business premises make one tremble at the thought of fire where women and men sleep in brick houses, and where we know that an outbreak must result in a sad list of deaths. The London County Council have from time to time initiated legislation having for its object the relief of such risks, and they



DETAILS OF PORTE-COCHÈRE, NO. 16, AVENUE DE LA GRANDE ARMÉE, PARIS.



This is a good example of modern French work, the ironwork in the doorways, and the finely modelled lamp between, being especially characteristic.

PORTE-COCHÈRE, NO. 16, AVENUE DE LA GRANDE ARMÉE, PARIS. GABRIEL MORICE, ARCHITECT.

have by a recent Act permitted the use of steel-framed structures which will encourage their use and lead to filling in with fire-resisting material, and so gradually tend to lessen these too frequently recurring accidents.

Enormous strides have recently been made in the manufacture and use of reinforced concrete for all sorts of purposes besides building construction, viz., bridges, staircases, etc. Frenchmen may be said, I think, to have been the pioneers in this form of fire-resisting construction, but an English architect, Professor C. H. Reilly, has just constructed a church, at Shackleton, throughout practically of this material, and both in design and appearance, from the illustration I have seen, it does not present any feature of ugliness.

[This church was illustrated in the Journal of September 14th, 1910.]

Reasonable Precautions.

Mr. Woodward insisted with particular emphasis on the care required in reinforced concrete construction, and expressed the desirability of increasing the present knowledge as to expansion and contraction in concrete and steel work, and as to the possible oxidation of the metal, and he concluded his paper with some useful words of caution:—First, he said, see that you specify the best English Portland cement, and then see that you get it. Let Belgium and Germany keep their Portland cement for themselves. Then see that your Portland cement is not used too fresh, and that it is turned out of the sacks on to a boarded floor for, say, three days, and turned over two or three times in the interval. Then determine as to your aggregate. Avoid burnt ballast, but do not be afraid of well and evenly broken

brick mixed with stone ballast, or breeze, quite free from particles of coal. Then do not mind spending a little money on reliable clerks of works. A hundred pounds or so in salaries to such men, simply to supervise the mixing of the materials and the proper disposition of the reinforcement, may possibly save many thousands of pounds and many lives.

The evolution of fire-resisting material may apparently know no bounds; it has at the moment culminated in reinforced concrete put now to all sorts of uses. But may I say one final word to architects (I leave engineers to take care of themselves)? Do not tremble at your floors and roofs; be very confident about your walls; be a little over-careful with your piers or other vertical supports; but—but, be over, and doubly, and trebly anxious about your girders.

NEWS ITEMS.

Change of Address.

Mr. Lee Warner has removed the offices of The Medici Society (also his own publishing offices) from Albemarle Street to 7, Grafton Street, Bond Street, W.

* * *

An Amalgamation.

A company has been formed, under the style of the Penmaenmawr and Welsh Granite Co., to amalgamate the undertakings of Darbishires, Ltd., Brundit and Co., Ltd., and the Welsh Granite Co., Ltd.

* * *

German Cement Plant.

As a result of the operation of the Patents Act, some engineering works at Rochester have been acquired by an Anglo-German company for the manufacture of cement-making machinery of a kind hitherto produced almost exclusively in Germany.

* * *

Reredos for Liverpool Cathedral.

Mrs. Marke Wood, widow of a Liverpool merchant, has offered in memory of her husband to defray the cost, amounting to several thousand pounds, of a magnificent reredos for Liverpool Cathedral. The reredos is to be carved in stone, and will be 48ft. high by 43ft. wide.

* * *

Kensington Gardens Improvements.

Certain alterations decided on by the Office of Works are now in progress at the west end of Kensington Gardens, including the formation of a wide avenue approach to the public entrance to the State Apartments from Bayswater Road. The new pathway will be the full breadth of the old brick piers adjoining the orangery, and will also lead to the Dutch garden.

* * *

H.M.S. "Thunderer."

We have received from Messrs. Callender's Cable and Construction Co., Ltd., of Hamilton House, Victoria Embankment, an excellent photogravure plate of H.M.S. "Thunderer," built by the Thames Iron Works and Shipbuilding Co., Ltd., at Canning Town, E., and launched on February 1st last. On this our latest Dreadnought the main electrical distribution has been carried out entirely by Callender's cable and special boxes.

* * *

Town Planning in Practice.

The National Housing and Town-Planning Council has convened a national conference, to discuss details of practical town-planning administration, which will be held on Thursday and Friday next, February 23rd and 24th, in the School of Civic Design at Liverpool University. The subjects for consideration include the actual details of the various steps which should be taken prior to the presentation of a formal application to the Local Government Board for permission to prepare a town-planning scheme.

* * *

A Barracks Contract.

Early in the month of December last tenders were issued by the War Office for the erection of the cavalry section of the new barracks at Redford, near Edinburgh. More than fifty contractors sent in tenders. The contract has now been awarded to Mr. Colin Macandrew, 13, Lauriston Gardens, Edinburgh. It amounts to about £100,000. Two years will be occupied in carrying out the work, which is the first portion of a large scheme, the total cost of which is put at £300,000.

Restoration of Glasgow Cathedral Roof.

The members of the Glasgow Technical College Architectural Craftsmen's Society recently visited Glasgow Cathedral for the purpose of inspecting the work in progress in connection with the restoration of the roof. Mr. M'Leay, clerk of works, of H.M. Office of Works, Edinburgh—from which permission for the visit was granted by Mr. Oldrieve—conducted the party. Among other things shown to the visitors were a pile of old oak rafters belonging to the thirteenth century, which were used in connection with the original construction of the building. While most of these rafters were in an advanced stage of decay, a number were seen to be remarkably well preserved. The construction of the new roof was begun in May of last year. The work is progressing rapidly, the portion of the roof above the choir being farthest advanced.

* * *

*Street Lighting by Gas and Electricity:
A Comparison.*

The Holborn Borough Council recently decided that there was room for improvement in the lighting of the streets, and the matter was referred to the Highways Committee. The gas companies and the electricity companies were invited to give demonstrations of their lighting, and afterwards to deliver sealed tenders. The result, as reported by the Highways Committee, was as follows:—The official tests showed that the electric lamps gave an average of 395 c.p.; and the gas lamps an average of 318 c.p. The tender from the gas company was for £7,527 per annum, and the Electricity Supply Company's tender was £6,602 per annum. The Highways Committee, however, recommend that the lighting should be placed in the hands of the gas company for the next 10 years. At last week's meeting of the Council the committee's recommendation was referred back, a majority being in favour of electric lighting.

* * *

A Chair of Civics for London.

In the course of his address when opening the Cities and Town Planning Exhibition at Crosby Hall, Chelsea, Mr. John Burns, President of the Local Government Board, said he hoped that civics and town-planning would be made one of the subjects of the curriculum of the London University, and that a chair of civics might be founded there, as had been done in Liverpool University. He was there to persuade the London University to imitate Liverpool University, and if there was any public-spirited man, like Mr. Lever, who was willing to give him £30,000 with that object, he would be glad to transfer the money to-morrow morning. In the past they had scandalously neglected the question of civics and town-planning to an extent which they now had to rectify. Every fifteen years 500,000 acres of land, an area larger than the county of Middlesex, was converted from agricultural and rural land into factories, workshops, and similar buildings.

* * *

A Handy Catalogue of Builders' Requisites.

A catalogue (No. 30) that has just been issued by Messrs. Young and Marten, Ltd., Stratford, London, E., consists of 406 pages (8½ in. by 5½ in.), with illustrations on every page, showing drain-pipes and foundation materials, timber and wood goods, plain and ornamental glass, architectural cast and wrought ironwork, sani-

tary engineers' appliances, baths and lavatories, grates and chimney-pieces, decorators' materials, ironmongery, door and window fittings, and gas and electric fittings, under which headings is comprehended most of the information that an architect or builder is likely to require respecting the ordinary run of requisites, and there are also some special lines, such as the "Hue" Fire, of which Messrs. Young and Marten are the sole proprietors. The "Hue" fire is upon the barless principle, coming low down on the hearth, and warming the room without wasting its heat up the chimney. It is manufactured to suit the base area of existing grates; and an ordinary tile grate, provided its back is in good repair, can be converted to the "Hue" system in less than thirty minutes. The catalogue does not conspicuously bear the name of its producers, a point that is often appreciated where the book is consulted in the presence of clients. Its very handy size is an additional recommendation.

A TECHNICAL DICTIONARY.

The present volume of this really important series of technical dictionaries has been prepared with the same scrupulous care and thoroughness as its precursors. The editor claims in a passage in his preface which may perhaps read somewhat less pompously in the language from which it is translated, that "The technical world of all civilised countries has participated in the preparation of this volume"; and a list of contributors and revisers comprising about a hundred and fifty names is at all events sufficient proof of the catholicity of the collection, although we regret to notice how inadequately Great Britain is represented, and are hardly the less sorry because the book does not seem to have suffered any consequential detriment.

Forms relating to wood-working machinery occupy about one-third of the volume, but, from our point of view, constitute the more valuable portion of the book, the rest of which is concerned with metal-working machines. There is also a special section showing figures and sections of different varieties of timber. The 2,400 small illustrations are an extremely useful feature of the volume, being well drawn, and seldom superfluous. It may be said, also, that the value of the work is to some extent enhanced by its omissions; the editor having very wisely decided to disencumber it of such commonplace terms and expressions as need no elucidation. Where the terms are given in six languages, this is at once a dangerous thing to do—because the commonness of a term does not necessarily exclude it from the category of words for which one could not readily find (for example) the Russian equivalent—and at the same time it results, no doubt, in a considerable economy of space, while sparing the reader the annoyance of continually meeting with terms which are not really technical, and are therefore to be found in ordinary bilingual dictionaries. These technical dictionaries in six languages are, at any rate, of high value and authority, and occupy a unique position among technological works, fulfilling very thoroughly a function that had been previously performed very inadequately.

The Demhardt-Schlomann Series of Technical Dictionaries, in Six Languages (German, English, French, Russian, Italian, Spanish. By Alfred Schlomann. Vol. ix., Machine Tools (Metal Working, Wood Working. Compiled by Wilhelm Wagner. Containing over 2,400 illustrations and numerous Formulae. London: Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C. 9s. nett. Pages x.—706, 4½ ins. by 7 ins.

THE INSTITUTE COMPETITION DESIGNS:

CRITICISM BY PROFESSOR C. H. REILLY.

The criticism of the R.I.B.A. students' competition designs always brings out a great deal of valuable comment; and Professor C. H. Reilly, as principal of the Liverpool University School of Architecture, speaks ex cathedra. The following extracts from his well-considered appreciations will therefore command more than ordinary attention.

PROF. C. H. REILLY, M.A. Cantab., said in the course of his criticisms, that the exhibition before us in its broadest aspects is the best indication we have of the general state of architectural thought among the younger generation. Students' work, at any rate in England, follows very closely—much too closely, I venture to say—the trend of current architectural taste, and whether an exercise be supposed to be in the principles of Palladio, Vignola, and Chambers or not, the result is generally a pretty faithful reflex of the latest competition devices of our competitively successful architects. In the absence of any national system of training in design it could hardly be otherwise. A year ago it was my good fortune to see in America the designs for the Stewardson scholarship, which holds there a similar position to our Soane medallion. The chief difference, as it strikes me now, was not that the best work was better, but that in one hundred or more designs submitted for this one prize the general level of accomplishment was considerably higher than it is here. Among our students we have evidence before us to-night of many men of brilliant imaginative power and great artistic ability, but they seem to lack that technical accomplishment in design, that knowledge of architectural effects and possibilities, which is necessary for ability fully to justify itself. But if the best men suffer from lack of continuous training in design, how much more do the lesser? Indeed, the main advantage of schools of design—the only modern equivalent to consistent architectural tradition—is that the general level is raised. Every one has remarked that in a time of strong tradition like the eighteenth century very little absolutely bad work was done, and the same results apply to the organised teaching of design which every country save our own now possesses.

He suggested that the Institute should make training in design the keystone of its system. History, mathematics, construction, materials, everything else, should be subsidiary to what after all is our main excuse for existence. Instead, therefore, of a couple of small designs and an elaborate system of written papers, he suggested the Institute should substitute a minimum of papers and a series of designs to which the Tite and Soane might be a fit culmination. He thought that the winners of these prizes might be allowed to qualify for membership just as the Prix de Rome, *ipso facto*, obtains for its holders their diplomas of the Ecole des Beaux Arts.

Ultimately, all works of art must live by their appeal to the imagination; that is the divine fire without which the cleverest rendering, the deepest scholarship are but negative accomplishments; and there could hardly have been chosen two subjects making a more immediate appeal to the imagination than those for this year's Soane and Tite prizes—a bridge and gateway to a capital city, and a wooded island in a lake set apart for the solemn rites of burial. They are ideal subjects, and our students—and all of us for the matter of that—should be encouraged to dream dreams; so-called English common sense and love of compromise will follow fast enough in practical office work.

The Tite Prize.

We need not despair of the future of our art when we have among us men of the poetical temperament of "Ek Thanatou Nikos," or capable designers like "Catafalque," "Apex," and the winner. The very capable design of Mr. Foggitt, "F. 13," is the most Italian design sent in, Bramantesque in general character. Mr. Foggitt has also made more of the Italian idea of a campo santo than the other competitors. Cutting a great wedge out of his island he has contrived a broad sloping way up to his chapel, flanking it on either side with arcaded terraces set back one behind the other. At the head of the slope stands the finely composed façade of the chapel, the dome of which crowns the island. The unobtrusive perspective hardly does justice to this effective approach. Where Mr. Foggitt has failed, I think, is in that the idea of a lonely island set apart for the solemn rites of burial is hardly conveyed by his pleasant scheme, which suggests rather a happy secluded convent building set among its terraced vines on some sunny Italian hillside. Mr. Foggitt's drawings are somewhat dirty in execution.

"Catafalque," who is placed second, sends a much better set of drawings *qua* drawings than the winner. I commend his half-inch detail as an example of how classical architecture should be drawn, with a quiet pencil or washed-ink line, and geometrically yet tenderly shaded. He has designed for his main building a temple-like structure with a finely conceived portico, and has wisely placed it, as the Greeks would have done, some little distance up the hillside, leaving the mountain behind to form a background. The interior of this building is particularly good. Half-way up his long sloping approaches, however, stand two octagonal structures for columbaria, and these are rather a blot on his scheme. They suggest to me both by their shape and detail garden pavilions rather than tombs. But the whole conception, if a little long for the island, is quiet and dignified, and the detail, except for one or two lapses, such as the archway with a broken cornice, and the pediments without any tie in the Newgate-like niches, is good and expressive. The perspective is a very pleasant drawing, embodying well the quiet serenity of the design; the buildings are seen in silhouette against a setting sun near the water's edge reposing ready to welcome the advent of the happy dead. To me the whole idea of this design is more truly classical in spirit than of any other.

"Ek Thanatou Nikos," if he has failed to win the prize, will win his victory from life itself. His two perspective drawings have the solemnity and mystery of an early Maeterlinck drama. I think his main building, with its high enclosed atrium, has something of the remoteness—the dignity combined with simplicity—that we find in the best Greek work. He has justified his use of Greek detail, if any justification were needed, by a quotation from Chambers: "It should always be remembered that the stream is purest at the head." His detail, indeed, shows considerable scholarship, especially in the row of

monuments in the niches, each differing in design. It is a pity they have been so carelessly drawn. Greek architecture calls for the purest, most delicate delineation. Besides his central building he has a quiet retired landing-place, and a little village set in a fold in the cliff, from which rises a circular stair to the headland on which he has placed his temple. All these are interesting and romantic features in themselves, but they are not bound into one architectural design, and the reason for this is the shape of his island. The author has assumed the shape to be that of a skull. It is an interesting idea though a non-architectural one, but that would not matter so much had it not hampered his design. It is really akin in spirit to the triangular lodge at Rushton Manor to symbolise the Trinity, or John Thorpe's scheme for his own home in which the plan spelt J. T. It is a pity so clever a designer should have been carried away by such an idea.

"Apex," to whom a certificate of honour has also been awarded, sends a very sensible set of sepia drawings, a little sloppy in finish due to their pencil line. Cockerell, and our great classic architects, always used a thin ink line. I would recommend to "Apex," and, indeed, to all who do not know them, the collection of Ecole des Beaux Arts drawings of the sixties, seventies, and eighties, published by the "Intime Club" of Paris, and called "Croquis d'Architecture." Here, among a certain amount of bad Gothic, you can dig out all sorts of monuments, to each of which the architects of the Greek Revival, from Garnier to Pascal, have given, what only Frenchmen seem able to do, the appropriate architectural expression. I found these drawings in use in each American school I visited.

Perhaps the schemes I have mentioned form the first class. The next, not far behind, would include "Red Diamond," "Charon," "Fate," "Naos," and "Catacomb."

The Soane Medallion.

The Soane has not produced this year to my mind so good a competition as the Tite, either in numbers (12-19) or in the general quality of the work, yet in these days of civic design an entrance to a capital city should have been an attractive subject. "Civitas" has sent in a thoroughly Beaux Arts set of drawings, even to the gold borders and the carefully composed frontispiece of details. The plans, sections, and elevations are all made things of interest in themselves. The draughtsmanship, if somewhat uneven, reaches in places a very high level indeed. The drawings are shaded throughout and made intelligible to laymen. In England we are wont to play up too much to the man who boasts he can never understand a plan, and I am sure the public appreciation of our art suffers in consequence.

"Mauerthor" has had an honourable mention given him for his clever essay in François Premier architecture. The Soane is not restricted—unfortunately, I think—to the fine classical architecture practised by Soane and his contemporaries. It is therefore open to anyone to send in what the Americans would call an essay in archaeology, and in this case it has been done with American thoroughness. The main gable, well shown on the half-inch drawing, exhibits all the varying scales, the uncertain grasp of motifs, which characterises such early work when ideas which since have blossomed were only in the bud.

"Silab," who also receives honourable mention, submits a very modern design. His perspective, which is full of fine colour

and fine feeling, shows him to be by nature a genuine and considerable artist.

The Grissell Prize.

The Grissell is given for construction rather than pure form. The subject was a large skating rink to be built and roofed in wood. Unfortunately, none of the competitors is adjudged worthy. "Oregon," whose building is quiet and satisfactory, has certainly attempted to design a novel form of roof. He has bifurcated his trusses above the hammer-beam, branching them on diagonal lines, which gives somewhat the effect of cross-vaulting, and at the same time braces the roof against wind pressure. If this roof would stand up—and I am assured by authorities it would not—it would certainly afford a striking and interesting interior. I think as an example of the "architecture of adventure" it deserves some credit. The drawings, too, are well made, and the roof construction clearly explained. The remaining designs are not very happy.

Measured Drawings Medal.

Seeing that the Pugin is worth £40, and is devoted to mediæval work, I wish the Institute could see its way to increase this medal from £10 to a like sum, and confine it to Classic and Renaissance architecture. Frankly, what is wrong with a good deal of our classical architecture to-day is that it is still too Gothic. Until we have devoted as much time to the study of classic forms as our predecessors did, and our Pugin enthusiasts do to-day to Gothic ones, we shall not make headway. At the same time we should learn to draw them in a style suited to their character. Classic architecture is an affair of light and shade rather than of line. It should be rendered therefore in light and shade, and the thick line drawing, which we owe to Burges, should be kept, if kept at all, for Gothic work. "Ethandun," the winner, has indeed sent shaded detail drawings of the Gothic building he has measured, and very well they look. His black line elevations are not so pleasing, and his surveys a little careless. The latter, however, are supplemented by many sheets of full sizes plotted on the spot, for which he deserves and has no doubt obtained credit.

The Pugin.

Some drawings are crisper, some more spotty, some water-colour drawings are cleaner than others, but beyond that what can one say? It is a matter more of craftsmanship and industry than anything else. Mr. J. B. F. Cowper, the winner, who is to be congratulated on winning the Ashpitel prize as well, sends six good perspective sketches of towers and spires, three in line, three in colour. He has measured several parts of buildings in the special wavy Pugin students measure. He has, however, included among these latter the façade of some almshouses at Nantwich, which but for the date, 1638, one would imagine were modern artisan dwellings.

The Owen Jones Studentship.

The Owen Jones Studentship has produced two good sets of drawings by Mr. Bellis and Mr. Oakley. The drawing by Mr. Bellis of the Pompeian decoration from the Castle of St. Angelo is particularly good. His colour, though, is not as good as his draughtsmanship, for some of his drawings suggest the reproductions in Mr. Owen Jones's book rather than the thing itself. Mr. Oakley is more daring than Mr. Bellis, in that he submits several sheets of original designs. Attempting more, he has made a high failure rather than an easy success. His decoration often conflicts with the lines of his architecture, and I am afraid his panels would reduce his council chamber to a restaurant.

Arthur Cates Prize.

Mr. Henderson, who wins this prize, sends some charming sketches chiefly from Italy, and a design for a Carnegie library. The latter, to my thinking, rather negatives the former. His best drawing is of Peruzzi's delightful Santa Maria Carcere at Prato. Why, I wonder, has Mr. Carnegie's personality ousted that of Peruzzi from Mr. Henderson's mind? Mr. Vey's drawings are not so good, though perhaps his design is better. Bay windows, however, running through several storeys, are difficult things to harmonise with a really strong cornice.

The Institute Essay Medal.

The winning essay, Mr. Honeyman's, on the design and construction of belfry stages and towers, is a very valuable piece of real research work, showing throughout intimate first-hand study and a thorough knowledge of his subject. Although only two essays have been submitted, the winner's amply justifies the Council in changing the type of essay subject to one involving research and scholarship. On the other hand, I do not like to see the more philosophical type of subject entirely abandoned. Could not we have both? Different types of men would be attracted, the man of ideas—the designer, in fact—to the one, the scholar to the other.

DISCUSSION.

Sir Aston Webb, R.A., proposing a vote of thanks to the President and to Professor Reilly, said he gathered that the remark which met with most satisfaction was the offer of a prize to students for the next annual address. [See the President's address in last week's Journal.] A more entertaining evening would have perhaps been provided if the President had permitted the address to be delivered there and then. Turning to Professor Reilly's criticism of designs, Sir Aston said he thought that students would feel fortunate in having so competent a critic for the task. It had, perhaps, been a little severe, but it was done in a kindly spirit by one who knew. Advancing to the easel containing the portrait of Mr. Ernest George, and drawing the curtain which had hitherto concealed it from view, Sir Aston said he had much pleasure in asking the President to accept the portrait of Mr. Ernest George, (vigorous applause greeted this remark, and continued for some minutes.) Proceeding, the speaker said they all knew Ernest George—Ernest by name, earnest by nature, and earnest in his work. All who knew him loved him. He was essentially and all-round an artist, who looked upon his work only from that point of view. The portrait was an excellent likeness, and the pose of the hands was to the life. They were indeed fortunate in having Sir Hubert von Herkomer to paint this portrait, which would grace and add history to their walls as nothing else could possibly add to them. He hoped the President would convey their best thanks to Sir Hubert von Herkomer for now having a work of his hanging upon their walls.

Mr. Selwyn Image, seconding the votes of thanks, observed that there was one thing in the President's breezy, virile and invigorating address that touched him "on the raw." Mr. Stokes stated that the public schools taught very little drawing, and that the universities were only just beginning to recognise even the existence of architecture. He was there as representing the University of Oxford, and wished he could say that the President had misrepresented things, but unfortunately he

could not. A certain Oxford M.A., seeing an acquaintance obviously bound upon some mission, asked what it was, and was told that a gathering was to be held to celebrate the send-off of the new Slade Professor. Rather astonished, the M.A. replied: "My good friend, you don't mean to say that Oxford takes the Slade Professor seriously?" But they had taken him seriously, although they did not fully recognise the fine arts, and that queen of arts, architecture. So far as his efforts could go, he would be spurred on by that pregnant sentence of the President's; and while he occupied the chair at Oxford he would bring home to Oxford the necessity for recognising architecture as the queen of arts.

Mr. Ernest George (who was greeted with prolonged applause) said it was very gratifying to have so flattering a representation of one who had been President for only two years. He thought that it was a grand thing to possess works by the modern masters; and he was very glad to be placed among the presidents of the past.

Mr. Leonard Stokes, on behalf of the Institute, then formally accepted the portrait.

Professor C. H. Reilly, in briefly acknowledging the vote of thanks with which his name had been associated, said he was afraid that, having to go through over 300 drawings, it was very difficult to do justice to all the works. He had looked through the addresses of his predecessors, particularly that of Mr. Waterhouse, and had come to the conclusion that candid criticism was the only kind of criticism worth anything at all.

AN ANCIENT LIGHTS CASE.

In the Chancery Division of the High Court of Justice on February 3rd, the case of Neale v. Wallis and Sons, Ltd., came before Mr. Justice Eve. This was an action for an injunction to restrain the defendants from building so as to obstruct the light to the plaintiff's windows. It appeared that the plaintiff carried on business at No. 73, New Bond Street (on the east side) as an auctioneer and valuer of works of art. The premises had been used for some 45 years for the examination of jewels and other works of art, for which purpose the light hitherto enjoyed was alleged to be essential. On the west side of New Bond Street, and nearly opposite to the plaintiff's premises was No. 99, which the defendants had pulled down, and they had erected on the site a building which was some 22ft. higher than the building pulled down, and which the plaintiff alleged would seriously diminish the light coming to the plaintiff's windows. This the defendants denied. Mr. Justice Eve, in the course of his judgment (as reported in the "Times") said: "It appears that of the defendants' frontage some 4ft. 6in. is opposite the plaintiff's frontage, and of this 4ft. 6in., 12in. to 18in. are opposite the window on the ground-floor chiefly affected by the defendants' operations. The angle of obstruction to the sill at the centre of the ground-floor window has been increased by the raising of the defendants' building from 34½ deg. to 48 deg., which reduces the distance by which a beam of light comes over the defendants' premises through the top of the upper sash of the plaintiff's ground-floor window into the ground-floor from 17ft. 8in. to 9ft. 8in. But I think on the whole evidence the plaintiff has failed to establish an actionable nuisance, and accordingly I dismiss the action with costs."

DUNKELD CATHEDRAL RESTORATION.

In the year 1820 the choir of Dunkeld Cathedral was repaired. At a lower level

originally belonged to the interior. At the same time, to shorten the choir, a thick wall was built parallel to the east end. The late Sir Donald Currie offered to bear the cost of a new roof, the removal of the partition walls and galleries, and the

beautiful walls of rubble or ashlar masonry. A few additions in the way of furnishings have been fitted, including an oaken pulpit, oak screen, and communion table towards the east with an ambulatory, and at the west a small gallery for the



DUNKELD CATHEDRAL · VIEW OF CHOIR LOOKING EAST. RESTORED BY W¹ DUNN AND R. WATSON, F.F.R.I.B.A., ARCHITECTS.

than the original roof was added a new one, which fitted in a rather clumsy way against the east gable; it was finished on the inside with unsightly plaster vaulting, jointed and coloured to represent stone. This vault was comparatively low, and entirely destroyed the lofty proportion that must have

reseating of the choir. The new roof has been built to the slope of the original one, shown against the gable. The tie was placed high up in order to preserve the lofty proportions of the building. Beyond this, little restoration has been attempted. A coating of plaster was removed, exposing

organ and choir, with a vestry underneath. The passages and the main body of the church are paved with old stones, but an oak wood-block floor was placed under the new pews, and a heating system has been installed. Messrs. Dunn and Watson, F.F.R.I.B.A., were the architects.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editors desire to give notice that answers to the following enquiries can no longer be undertaken :—

- (1) Enquiries about buildings to measure in particular towns and districts.
- (2) Enquiries embodying questions which have been set in examination papers.
- (3) Enquiries which ask for or require the preparation of special designs as part of the answer.

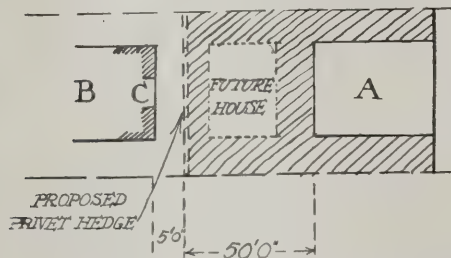
Cleaning Leadwork.

H. B. writes: "I have recently completed a two-storey bay window, and have covered the space between the head and sill with leadwork, the ornament of which has been tinned; but owing to the smoky atmosphere of the town it soon gets very black and dirty. What do you consider the best material with which to clean it down periodically, with a minimum amount of labour? It should be something that will not damage the leadwork or tinning."

—No entirely satisfactory method can be recommended, as in any case cleaning down will render the leadwork more susceptible to staining in future. Probably the best that can be done is to wash with plain water; and if this is not sufficient to remove the blackness, a little fine silver sand could be used with it, though this will roughen the surface and cause dirt to adhere more readily. Acids could of course be used for cleaning, but would render the bright metal liable to tarnish very quickly, besides probably staining or discolouring the work below. All things considered it will be best to leave it alone, and remember in future that a smoky town atmosphere is not favourable for the display of bright metals. G.

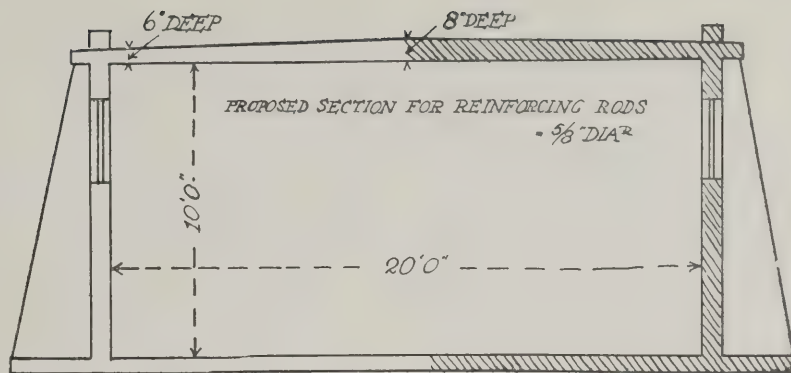
Privet Hedge to Preserve Right of Light.

R. W. writes: "Is a privet hedge, if allowed to grow to a certain height, sufficient to preserve any right of light to a house that may be built on the land in the position shown on sketch plan? The houses marked A and B were built five years ago. The land hatched in belongs to A, who will probably build a house in

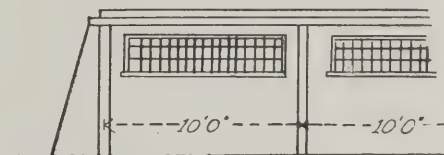


a few years' time, and who desires to protect any right of light. C is the window of B's house, 5ft. high by 8ft. wide, and 3ft. from ground to sill."

—I understand this question to refer to the already existing window in the side of the adjacent property belonging to B, and that it is wished to prevent the acquisition of a right of light by B in such a way that the "future house" may be difficult to build hereafter. (1) I take it that all these plots were purchased from one person under a building scheme; if so, it will probably be found that there is a special clause in the "conditions of sale" or "building regulations" attached to the contract (under which the land was bought) which covers the whole ground by preventing the acquisition



CROSS SECTION

PART ELEVATION
REINFORCED CONCRETE ROOF.

of such a right as you now fear, in which case the matter is settled for you, and you may safely leave the whole thing alone. (2) If there is no such clause in the contract of purchase, or if you have no information upon the subject, I rather doubt whether your privet hedge is sufficient to protect you, and I should advise you to erect a board opposite B's window, or that you should obtain a written acknowledgment from him, accompanied by the payment of a trifling rental as an acknowledgment that the window is not an "ancient light." An "ancient light" is one which has been in existence without interruption for 20 years, but it should be remembered that such a light cannot be stopped when 19 years and a day have elapsed since its construction. F.S.I.

Reinforced Concrete Roof.

W. D. (WORSLEY) writes: "I am interested in a projected building of reinforced concrete. It may be about 100ft. long, with a cross-section giving inside measurements of 20ft. clear span and 10ft. from floor to ceiling. It is very desirable that there should be no projections inside the building, and I want to know if it is possible to form the roof in reinforced concrete, quite flat on the underside, and with, say, 2ins. rise towards the centre of the span on the outside. I am aware, of course, that for stiffness beams or slabs should have a good depth; but as this roof will have nothing but itself to carry, and a possible fall of snow, I would like to make it, say, not more than 8ins. maximum thickness. A section is here given, and I should be glad to have your expert's opinion as to the feasibility of the suggestion, and the amount of reinforcement which would be required."

—A roof slab without ribs can quite well be built as suggested. It would need to be constructed of good concrete, proportioned 1 cement, 2 clean coarse sand, and 4 broken gravel or granite or sand stone, graded from 1/4in. to 3/4in., not exceeding the latter size, and all below 1/4in. being counted as sand. If 8in. thick at the centre, and 6in. at the supports, it would require, on the basis of limiting stresses, 600lbs. in 2 in the concrete, and 16,000lbs. in 2 in the steel, 3/4in. dia. rods at 7 1/2in. centres. There is no need for the buttresses shown on the section sub-

mitted. The walls would be sufficient; or columns could be provided, and the wall between reduced. It must be recollected that the detailing of such a roof requires experience, and should be done by a specialist. We cannot take any responsibility for suggestions as to designs of this nature, for the circumstances may be different from what is represented, or may be materially altered by other conditions not furnished; and the workmanship, too, is beyond our control. These columns are not intended for our correspondents to get gratuitous designs, for which an architect or engineer should be paid.

Open Joisted Floor.

Under the above heading we published in our issue for January 25th (page 96) an answer to an enquiry concerning the proposed construction of floor joists as beams in the ceiling below. This method, it was pointed out, would prove rather unsatisfactory unless adequate precautions were taken against the conduction of sound, and the use of deadening quilt was suggested. Cabot's quilt, it may now be added, is excellent for this purpose, laid between the floor boards and the joists. It has been used in conjunction with a similar floor to that shown in the diagram which accompanied the reply to the enquiry. The material is supplied by Messrs. Arthur L. Gibson and Co., Radnor Works, Strawberry Vale, Twickenham.

Canterbury Cathedral.

W. G. L. (WESTGATE-ON-SEA), writes: "Please furnish information respecting (1) the materials used in the building of the various parts of Canterbury Cathedral, and (2) a book dealing with the construction and history of the chapter-house."

—With regard to (1), the clerk of the works at the Cathedral would probably be able to supply the information required. (2) An admirable work on the architecture and construction of Canterbury Cathedral is that by Willis, issued in 1845. This contains a number of plates (8vo and folding), including some in colour. The work is out of print and scarce, but Mr. B. T. Batsford, of 94, High Holborn, London, can supply a copy for 18s. post free. Canterbury is included in Bell's "Cath-

dral Series," price 1s. 6d. net (postage 3d.), but this is only a brief illustrated history.

Sea Sand for Building Purposes.

E. J. P. (DUBLIN) writes: "Please reply to the following queries relative to the value of sea sand for building purposes:— (1) From what part of the shore should the sand be removed? (2) To what depth should the sand be excavated? (3) Should the sand be bleached? What length of time does this process take, and in what manner should it be carried out? (4) Is sea sand thoroughly suited for lime and cement mortar, and in what proportions should it be gauged?"

—(1) The sand would most conveniently be taken from that part of the shore where it is cleanest and most free from large stones, so as to reduce the labour of sifting. (2) The sand may be dug out of holes to any depth that is convenient, having regard to the foregoing remarks. (3) The sand need not be dealt with in any way except sifting to get the fine sand passed through a $\frac{3}{16}$ in. mesh sieve, as is necessary to get it to work well in mortar. (4) Sea

sand is quite suitable for lime and cement mortar, but the salt may effloresce; and if that is not desired it might be washed or soaked in fresh water. The proportions generally employed with Portland cement are for plastering 1:2, and for brick or stone work 1:2 or 1:3. The last is quite good enough for most purposes. When hydraulic lime is employed mortar should be proportioned for plastering 1:1, and for brick or stone work 1:1 or 1:2.

Book on Stresses in Structures.

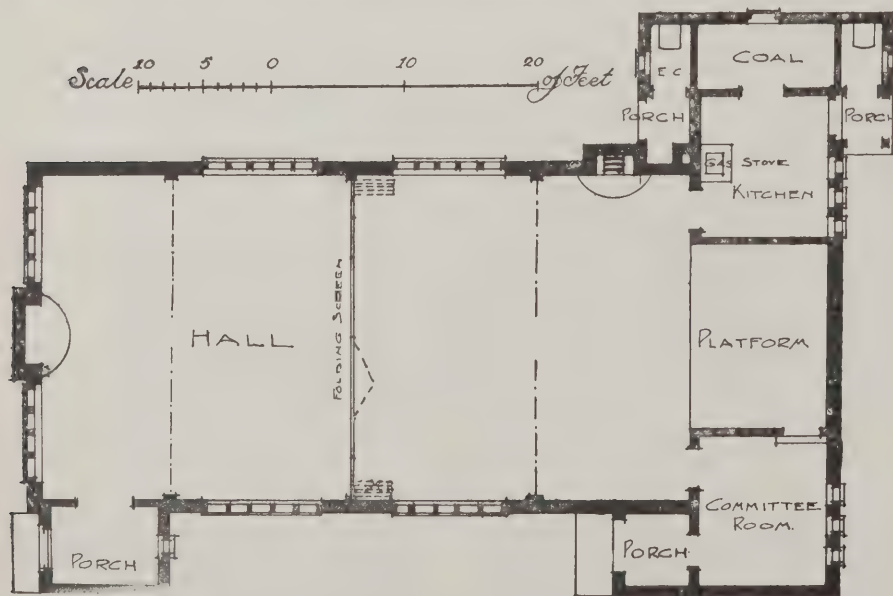
J. H. writes: "Kindly give particulars, price, and publishers, of books dealing with stresses in structures by the method of sections or method of moments. 'Iron Bridges and Roofs,' by Prof. Ritter, is a book that deals with the subject, but I am informed that it is out of print."

—Ritter's "Iron Bridges and Roofs" is, as you say, out of print, but second-hand copies are sometimes obtainable. You will find much useful information, however, in Du Bois's "Mechanics of Engineering," volume I., a second-hand copy of which Mr. B. T. Batsford, of 94, High Holborn, London, can supply for 20s. net.

FIRE PRECAUTIONS IN CITY OFFICES.

A case that has been brought before the Tribunal of Appeal under the London Building Act, 1905, represents the first attempt of the London County Council to enforce section 9 of the Act with regard to City offices. The action taken had reference to Winchester House, Old Broad Street, E.C. The section in question, it will be remembered, refers to the provision of means of escape from fire in "(a) a high building; or (b) a building in which sleeping accommodation is provided for more than twenty persons, or which is occupied by more than twenty persons, or in which more than twenty persons are employed."—Mr. Astbury, counsel for the appellants contended that the means of escape from fire in Winchester House were ample, and that if the requisition of the County Council were complied with the building would be rendered less rather than more safe, and the structural arrangements would be materially interfered with. New staircases would have to be constructed, private corridors would be thrown open to the public, and swing doors would be provided in order to act as smoke checks. The Council, he said, "wanted to place nineteen doorways in this unfortunate building, and the result would only be to add to the danger instead of decreasing it." With regard to the Council's proposal to run a gangway through certain offices, counsel said that "the company would be breaking their leases, losing their tenants, be liable to actions, and generally have a very gay time for some years." In reply to a question from the President (Mr. A. A. Hudson), he stated that the number of people in the building during the daytime was about eight hundred.—Mr. Ernest Flint, architect and surveyor, giving evidence on behalf of the appellants, said he regarded swing doors as a source of danger, as accidents had been frequently caused by them.—Mr. P. Tubbs, architect, said that not one of the three requirements of the Council—the staircase, the alternative proposal of making the corridors continuous and public on each floor, and the swing doors—was necessary, considering the character of the building and the nature of the business carried on there.—Mr. Walsh, who appeared for the Council, seemed disposed to agree with a remark of the President to the effect that the proposed manner of applying the smoke doors on staircases would turn the staircases into flues; but what the Council said, he added, was that if both staircases were enclosed it was only in the million-to-one chance of two fires breaking out and involving two staircases at once that the difficulty at which the President had hinted would arise. By carrying out the Council's proposals the smoke would be confined to one staircase, and the other would provide a means of escape.

Mr. J. C. Stransom, of the Architect's Department of the L.C.C., gave evidence in favour of the Council's proposals, and the enquiry was then adjourned. On its resumption, Mr. A. Dyer, M.Inst.C.E., Divisional Officer of the Fire Brigade, said that he thought smoke-doors essential for the protection of life. In cross-examination, he admitted that he did not know of any purely office building in which the staircases were enclosed by doors, and that, taking into consideration the cross currents in this particular building, it was improbable that, in case of fire in the basement, the staircases would become smoke-logged.



VILLAGE HALL, SLIP END. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

—Mr. W. Woodward, F.R.I.B.A., said that in his opinion the means of escape from fire at Winchester House were inadequate, and that the requirements of the Council with regard to the staircases were reasonable.—Mr. H. D. Searles Wood, F.R.I.B.A., also supported the L.C.C. case.—Mr. Walsh, in his address on behalf of the Council, laid stress on the enclosing of the staircases.—Counsel for the appellants said that his clients had offered to adopt measures which ought to have prevented the present proceedings, which were very costly to his clients.—The President asked Mr. Astbury whether, in his opinion, the Tribunal would have power to vary the order so as to include things that were outside the notice, such as the fitting of iron doors to the storerooms.—Mr. Astbury thought that the Tribunal had not that power; but that his clients would raise no objection to an order being made in such terms.—The Tribunal reserved their decision.

A POSTAL ANOMALY.

Publications that are issued less frequently than once a week labour under grave disabilities with regard to postage. A weekly periodical, provided it complies with certain regulations as to contents (which must include a stated proportion of news items), may be sent through the post in the United Kingdom for a half-penny, even though it weighs as much as 5 lb.; but any publication appearing at less frequent intervals is charged in accordance with its weight avoirdupois; with the result that in some instances the charge for postage is equal to the price of the periodical, and in any case is strikingly disproportionate. This anomaly is, in the fullest sense of the phrase, "in restraint of trade." The chief sufferers, after all, are the public whose interests the periodicals exist to serve. The invidious distinction between newspapers and magazines (amounting virtually to a tax on the latter) should be removed. The General Post Office would probably lose nothing by the change; in time it is probable that there would be an increase in the revenue on this account. That, however, is a matter of far less importance than the general benefit that would accrue to the community from a less arbitrary restriction upon the circulation of valuable printed matter. While it is acknowledged on all hands that the most urgent need of this country to-day, if it is to continue commercially prosperous, is the spread and intensification of practical knowledge, the General Post Office obdurdly refuses to lend its aid in the diffusion of that knowledge. Its attitude on this matter is, indeed, quite incomprehensible. As a matter of mere conveyance, bulk is its only rational and practical concern; yet, nevertheless, it exercises a kind of censorship on the contents of periodicals, arbitrarily deciding what is and what is not news, and decreeing that every other class of matter shall be heavily penalised. Efforts have been made from time to time to relieve the General Post Office of the burdensome and invidious duty of insisting on these distinctions; and a new movement with the same object is now gathering force. We wish it all success; because the almost prohibitive postal rates imposed on magazines are equivalent in effect to an injurious tax on knowledge, which ought with the least possible delay to be entirely abolished.

SOCIETIES' MEETINGS.

Guild of Architects' Assistants.

The Guild of Architects' Assistants, at a meeting held at Prince Henry's Room, Fleet Street, on February 7th, had before them a "Mock Arbitration Case," arranged by Mr. J. Gerald Large, P.A.S.I.

The case was assumed to have arisen through certain amendments being demanded by the district surveyor, the architect refusing to accept the surveyor's interpretation of the Act. The builder, however, carried out the instructions of the district surveyor, contending that he had power to do so, as provided by Clause 5 of the R.I.B.A. Contract. The result is a dispute between himself and the building owner, the matter being referred to arbitration for settlement. The building owner makes a counter-claim for damages. Both claims were well contested and the evening was undoubtedly instructive to those members whose professional experience has not been associated with arbitration cases.

Manchester Society of Architects.

On February 8th, Mr. F. W. Jackson read a paper entitled "The Village." He first reviewed modern conditions and tendencies in art, and compared them with the conditions under which the great works of the past were produced, and then passed to the study of the buildings of a village on the north-east coast of Yorkshire, the village of Hinderwell. It was of no antiquity, and its church was ordinary; but, with a little search, one can see the rise and fall of its craftsmen. At one time there was something of the picturesque, but that element has almost gone, and is giving place to something that concerned him much. The old cottages show signs of a life that could appreciate beauty; these qualities are not to be found in the newer ones. Then one could find among the tombs in the churchyard some that show merit in their design and lettering; but who would visit the modern cemetery in search of beauty, although the modern mason is more expert? This leads one to consider what is happening to the dwelling-houses of our people. He showed examples of old-time simplicity and naturalness, and modern flashiness. He was no believer in the cry that we were a decadent people. We have become possessed of materials and facilities that the world has not known before in all the arts. The problem for students was how to adapt these modern conditions. It was no good to ignore them; we cannot in our village get the blacksmith, or the joiner, or the mason. As a painter, he deplored the colour of many of the new materials now in use in these smoky districts, and he thought the thing to strive for in our town was bigness of massing and a fine skyline. J. T. H.

The Society of Engineers.

At last week's meeting of the Society of Engineers (Incorporated), the chair was first occupied by the retiring president, Mr. Diogo A. Symons, M.Inst.C.E., who presented the following premiums awarded for papers published in the Society's "Journal" during 1910:—The President's Gold Medal to Mr. W. C. Easdale for his paper on "Sewage Disposal Ideals"; the William Clarke Premium to Mr. S. M. Dodington for his paper on "Public Slaughterhouses"; the Bessemer Premium to Mr. C. W. V. Biggs for his paper on

"The Inspection and Testing of Engineering Materials and Machinery"; the Nursey Premium to Mr. Henry C. Adams for his paper on "Current Professional Topics"; a Society's Premium to Mr. A. H. Allen for his paper on "Electricity from the Wind"; a Society's Premium to Mr. C. R. Enock for his paper on "Engineers and Empire Development." Mr. Symons then vacated the chair in favour of Mr. F. G. Bloyd, the president for 1911, who proceeded to deliver his inaugural address.

COMPETITIONS.

"Owen Jones" Competition for Wall Paper Designs, etc.

The Royal Society for the Encouragement of Arts, Manufactures, and Commerce, announce that the next award of the "Owen Jones" prizes will be made for designs which must be submitted to the Board of Education by April 1st. These prizes are given to students of schools of art who, in annual competition, produce the best designs for household furniture, carpets, wall-papers and hangings, damasks, chintzes, etc. Six prizes will be offered for competition, each prize consisting of a bound copy of "The Leading Principles in Composition of Ornament of Every Period," from the "Grammar of Ornament," by Owen Jones, and the Society's bronze medal.

LIST OF COMPETITIONS OPEN.

FEB. 25. COTTAGE HOSPITAL, ST. AUSTELL.—Architects practising in the County of Cornwall are invited to submit designs for a cottage hospital to be erected on the Trewoon Road, St. Austell. Designs to be sent to the Hon. Secretary, Mr. Henry Hodge, C.C., Trevarrick, St. Austell.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee, E. Pearson, Corbridge.

MARCH 1. FREE LIBRARY, PENISTONE.—Competition limited to architects within thirty miles of Penistone.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 26.

FEBRUARY 17—MARCH 24. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums, not exceeding £250, for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. J. S. Reay, F.R.I.B.A., has been appointed assessor. Applications by February 17th. Designs, March 24th, Town Clerk, Guildhall, Swansea.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Prof. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber,

F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

NO DATE. PARISH HALL, SWINTON.—The Vicar and Churchwardens of Swinton require plans, etc., for the erection of a Parish Hall and other buildings. Architects may obtain full particulars on application to the Rev. C. Steele, Swinton Vicarage, Rotherham.

NO DATE. ELEMENTARY SCHOOL, LOWESTOFT.—Twenty, ten, and five guineas for designs. Competition limited to Norfolk and Suffolk architects. A professional assessor will assist the Lowestoft Education Committee. Particulars on payment of 5s., from R. Beattie Nicholson, Town Clerk, Town Hall, Lowestoft.

NEW METHOD OF CONSOLIDATING CONCRETE PAVEMENTS.

A vibrator for compacting concrete roadways instead of the usual tamping methods was employed in building the Munger Boulevard at Dallas, Tex., by Mr. R. C. Stubbs, of that city, who has secured a patent for his device. The subgrade was prepared in the usual manner, and finished with its surface 5in. below the grade established for the pavement surface. A 1:3:6 concrete, mixed in an Austin cube mixer, was then spread to the full depth of 5in. and struck to the proper grade. A coating of medium sized broken stone was then placed upon the surface and boards or platforms laid over the pavement. Upon these the vibrator was operated, the planking being moved forward when one section had been consolidated. The vibrator consists of a motor-driven mechanism mounted upon a hand truck, through which the vibrations set up are transmitted to the planking and thence to the concrete below. The operation serves not only to consolidate the concrete itself but also to embed the stones in the upper portion of the concrete. The machine has a rated capacity of 1,000 sq. yd. of pavement per nine-hour day. The advantages of this method of consolidating concrete pavements, as set forth by its inventor, are that a greater density and more even texture in the concrete are obtained. The rapid succession of comparatively light blows delivered by the vibrator, in conjunction with the weight of the apparatus, are more effective, it is claimed, than tamping, since the air and water are driven out and the resulting mixture is practically without voids.

FEDERATION NEWS.

Midland Centre Conciliation Board.

A special meeting of the above board, to consider a dispute with the Nottingham carpenters and joiners, was held at the Imperial Hotel, Birmingham, on Tuesday, 31st January. Mr. J. B. Whitehouse presided, and there was only one member absent from each side of the Board. At the outset of the proceedings a vote of sympathy was passed with the family of the late Mr. John Matthews, who died last November, and who had sat as an operative member on the Board since its inauguration in March, 1906. The points to be settled by the Board were as follows:—Rule 1 (wages).—The operatives asked for an increase of wages, from 9d. per hour to 10d. per hour. Rule 4 (walking time).—The employers objected to any walking time rule. Rule 10 (notice of dismissal).—No notice at present required. The operatives desired two hours' notice for grinding and sharpening tools. The following were the decisions of the Board:—(1) That the present walking time rule be altered by striking out item C (viz., all workmen living outside the 1½ mile radius shall commence work at the proper starting times), and inserting the following words at the end of the rule:—"This rule does not apply to men set on at a job." (2) That rule 10 shall read as follows:—"One hour's notice shall be given or required of any intention to put an end to the service, and in default thereof either party shall forfeit or pay to the other side one hour's wages, such time to be applied to the tools or in continuation of work. Any workman discharged when working away from the shop to be entitled to walk to the shop in the employer's time, unless there is convenience on the job for grinding; if by train, third-class fare, or walking time at 3 miles per hour." (3) That rule 1 read as follows:—"That the standard rate of wages be 9d. per hour." (4) That the foregoing rules shall come into force on 1st July next.—FRED. W. AMPHLET, Employers' Secretary.

Barrow-in-Furness Master Builders' Association.

That annual meeting of this association was held on Tuesday, January 31.

The election of officers resulted in the re-appointment of Mr. W. Saddle as president, Mr. J. Baker as secretary, and it was resolved to ask the manager of the Bank of Liverpool to act as treasurer. The members of the various trades committees were re-elected.

It was reported that the Borough Engineer had agreed to the request of the association that only successful tenderers be asked to supply priced quantities in future, and that for tenders amounting to £250 and upwards separate tenders be asked for the various trades concerned.

Correspondence was submitted with the Federation re trade discounts, and complaints from some of the members on this question. Approval was given to the opposing of bills promoted in Parliament by Local Corporations for powers to do electrical wiring.—J. BAKER, Secretary.

Liverpool.

The annual dinner of the Liverpool Master Builders' Association was held at the Bear's Paw Restaurant, on February 7th, the President, Mr. J. T. Duthie, in the chair.

Responding to the Toast, "Architects and Quantity Surveyors" (proposed by Mr. Chas. Tomkinson), Mr. Arnold Thornely, F.R.I.B.A., said that so far as he could gather, the building trade in Liverpool had not been very good of late, but he believed there was a revival in the south of England, and he thought that the improvement must soon extend to the north.

Mr. Costain proposed the toast of "The Municipal Engineers and Surveyors," and Mr. Alexander responded.

Mr. J. B. Johnson proposed the toast of "Kindred Associations," which was responded to by Mr. James E. Beard, Past president of the Building Material Trades Association, Ltd.

The toast of "The Liverpool Master Builders' Association" was proposed by Mr. J. T. Jones (President of the Liverpool Property Owners' Builders' and Ratepayers' Association), and responded to by the President of this Association, Mr. J. T. Duthie.

Mr. R. Arthur Costain proposed a vote of thanks to the Secretary, Mr. Bertram B. Moss, who replied.—BERTRAM B. MOSS, Secretary.

King's Norton and Northfield.

The King's Norton and Northfield Master Builders' Association held their fifth annual dinner at The Exchange Restaurant, Birmingham, on February 2nd, Mr. Harold Grice presiding over a company numbering about sixty.

"The King's Norton and Northfield Master Builders' Association" was proposed by Dr. Garbutt, Councillor H. M. Grant responding.

The President proposed "The Local Governing Bodies. Councillor Watts replied.

"Kindred Associations" was proposed by Councillor R. E. Bull, and responded to by Mr. W. Moffat.

The toast of "The Visitors" was proposed by the Vice-President, Mr. J. H. Handcock, and responded to by Mr. E. Horton.

Mr. F. W. Amphlet (Secy. Midland Centre Federation), in proposing the toast of "The Presi-

dent," said that the National Federation, which was a very democratic body, was constantly sending down to the branches matters for their consideration, but when the various associations expressed their opinions on these questions, very often the views of only 20 per cent. or 30 per cent. of the membership were represented. When the Federation took action in accordance with what appeared to be the wish of members generally, and then found that the 70 per cent. or 80 per cent. of members, who had not troubled to make their views known, were not prepared to support such action, difficulties arose, and the real workers in the Federation naturally felt aggrieved and disheartened. Every member of every Association should feel his responsibility in regard to the work of the Federation. There would then be no limit to the far-reaching benefits and advantages which our great organisation could secure for its members.—H. H. COPELAND, Secretary.

Wakefield and District.

The monthly meeting of the Wakefield and District Master Builders' Association, was held at the Great Bull Hotel, Wakefield, on February 9th, Mr. James Pashley (President) in the chair.

The Committee of Master Joiners appointed at the last meeting to consider the complaint received from the Operatives' Joiners' Society to the effect that certain members of the Association were not carrying out the winter working rules with regard to working time, reported that, after making enquiries, they were satisfied that none of the members had infringed the rules, as suggested, and it was decided to write to the Operatives' Society accordingly.

Discussion took place on the question of a fair trades clause, proposed to be inserted in contracts with public authorities, and other associations, priced schedule of prices, prime cost items, and other matters affecting the trade generally and locally.—J. BEAUMONT, Secretary.

York.

The annual dinner of the York Master Builders and Contractors' Association was held at the Windmill Hotel, the Mount, York, on February 2nd, when the President (Mr. W. E. Biscomb) was supported by the Sheriff of York (Mr. F. A. Camidge), the President of the National Federation (Mr. J. W. White), the President of the Yorkshire Federation (Mr. A. J. Forsdike), the Senior Auditor of the National Federation (Mr. A. W. Sinclair), Councillor Hardgrave (Vice-President of the local Association), Mr. W. C. Creaser (Secretary of the Stockton and Tees Associations), and about 80 others.

Councillor Hardgrave proposed "The National Federation," and expressed the pleasure that was felt in the presence of the President, to whom he wished a successful year of office.

The President (Mr. J. W. White) referred to the work of the Federation, which, he said, was comprised mainly under three heads (1) the regulation of conditions of labour (2), the dealing with questions arising out of their work with architects and surveyors; and (3) the watching and influencing of legislation. He referred to the beneficial operation of the conciliation boards, the desirability of extending the use of the R.I.B.A. form of contract, the need for greater clearness in the quantity surveyor's details. He felt that it had become absolutely necessary to watch carefully legislation relating to industrial affairs. They had had the Workmen's Compensation Act, the new regulations as to scaffolding, Labour Bureaux, unemployment insurance, and Board of Trade returns. He thought it would be well if they could digest the legislation they already had, to see whether it was operating satisfactorily, before proceeding to add to the list. With reference to the Workmen's Compensation Act, there was much room for improvement. Too much malingering had arisen, and it had been encouraged by the decisions of the County Court judges, who were not properly trained men for such cases. They were essentially medical cases, and the judges were often taken in by a bit of clever acting. The result was seen in the increased premiums of the insurance companies. In his opinion, more use should be made, in this class of case, of the medical referee. In conclusion, the President referred to the damage and discredit brought upon the industry by the constant accession from the ranks of men who had no adequate knowledge of book-keeping, or of business methods, and who by their absurdly low tendering swelled the bankruptcy lists and did moral and material injury to an honourable industry.

Mr. W. E. Biscomb proposed "The Yorkshire Federation," He emphasised the importance of technical education in the building trade. He thought they, as an Association, should approach the educational authorities in the matter. Apprentices had not been made in adequate proportion, and in the event of improved trade there would be a scarcity of skilled labour.

Mr. A. J. Forsdike (president of the Yorkshire Federation), in reply, congratulated York on having such a successful and well organised association.

Mr. A. W. Sinclair proposed the City and Trade of York, and the tremendous appeal made to the emotions by York in its walls, churches, and the multiplicity of its many ancient buildings, and its glorious Minster.

Mr. Alderman Birch gave "The Architects and Surveyors" and Mr. S. Needham and Mr. J. W. Hame responded.—J. HAGUE, Solicitor, Secretary.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, February 22nd, 1911.





PUBLIC LIBRARY, HARROGATE. HENRY T. HARE, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
FEBRUARY 22nd, 1911.

Volume XXXIII.

No. 839.



DOORWAY IN BUCKINGHAM STREET, LONDON, S.W.

This dates from the Eighteenth Century, and is a fine example of the period. It is carried out in wood.



The figures over the portal, representing the Recording Angel, with Fertility (on the left) and Truth (on the right), are the work of Mr. F. W. Pomeroy, A.R.A. The entrance gates and the grille over are of wrought-iron.

MAIN ENTRANCE TO CENTRAL CRIMINAL COURT, OLD BAILEY, LONDON.
THE LATE E. W. MOUNTFORD, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

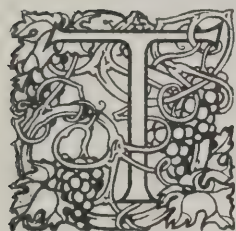
FEBRUARY 22nd, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 839.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The Board of Trade London Traffic Report.



THE new Report of the London Traffic Branch of the Board of Trade is a most remarkable document, from the amount of statistical information it contains, both in printed statements and in maps and diagrams. A great deal of the matter contained in it refers to questions of the material and method of control of traffic which do not come

within our special province; but considerations as to the requisite width of roads, and the supply of routes between central London and the outlying districts, have a most important bearing both on the architectural effect of streets, and on the possibility of profitable outlay in building, according as a new building has adequate or inadequate road communication with central London. As is observed in the Preface to the Report, many vacant areas of considerable extent within 15 miles of Charing Cross could be made available for the erection of dwellings if proper access were provided; whilst in others, where building has commenced, progress is retarded by the want of suitable communications.

A word may be said first as to the maps and diagrams appended to the Report. Plate I. is a specimen quarter-sheet of the Ordnance Survey of six inches to the mile, showing the growth of building in a London district (in this instance Chiswick and Barnes) during the ten years from 1891 to 1901, and from that period to the present date; new buildings of the first decade being shown blue, those of the later decade red. This is given apparently as an example of a method which, if carried out for the whole district immediately round London, would be of no little interest and value. Plate II., to which we shall return, shows the existing main arteries out of London, and the additional roads proposed in the Report. Plates III. and IV. are coloured to show the population density of Greater London in 1901 and 1908, by twelve graduated colourings representing the amount of population per acre, from "2 and under," to "over 150." The respective densities have not altered much in the interim; the configurations of the central position are much the same in both maps. In the outlying districts one notices that Merton has advanced from "2 and under 5," to "5, and under 10"; in other words, has doubled its population; that of Tottenham has increased by one-fifth, Low Leyton to the same extent, East Ham from "20 to 30" to "40 to 50"; Greenwich remains stationary at "20 to 30," Lewisham has increased by one-third, Acton by the same amount, Ealing is stationary at 10 to 20. There is not much increase of population westward; the tendency seems rather northward and southward. Plate V. shows graphically in the same manner the comparative rate of increase and decrease of population in different districts; increase represented by shades of red, decrease by shades of blue; practically the same result shown in a different way. Finally, Plate VI. shows graphically the volume of traffic on each of the main roads leading out of London, according to the Traffic Census in the summer of 1910; the question of summer or winter in such a census is important, as in summer there is a great deal of holiday traffic which hardly exists in winter. The com-

parative amount of traffic is indicated by the width of the red bands covering the lines of the principal roads, radiating from central London in starfish fashion. Most of the traffic is considerably reduced before it reaches the 9-mile radius, some of it stops short of that radius. The routes which maintain a considerable traffic for the greatest length of road are those via Edmonton to Cheshunt, via Croydon to Coulsdon and via Brentford and Isleworth to Staines.

The main object of the present Report is to consider the improvement of and addition to arterial roads in and out of London, illustrated in the Plate II. already referred to; but before reverting to that we may notice some of the suggestions as to necessary width of road, in which we entirely concur. It is pointed out that for a main street with shops in it, and tramways in the centre, provision has to be made not only for two lines of traffic on each side of the tram lines, for vehicles moving at different speeds, but for vehicles standing and loading or unloading at the kerb, which means practically three lines of traffic on each side of the trams. Such conditions demand 85 feet in width of roadway, and 40 feet for the two footways. Even apart from the tramway question, the Report points out how inadequate are the 60 feet widths of Shaftesbury and Rosebery Avenues. In London that has always been our fault, making streets too narrow; fortunately the municipal authority does seem to have wakened up to the fact at last, and we have Kingsway and Aldwych 100 feet wide, without tramways; with tramways that would be too narrow. The Report proposes the following schedule of widths for roads of different classes in the neighbourhood of London:

	FEET
Main arterial roads not less than	100
First-class country roads, either radiating, or connecting places of importance	75 to 100
Second-class country roads	50 to 75
First-class district roads, connecting villages or forming branches of main or country roads	35 to 50
Second-class district roads, mostly country lanes	25 to 35

In regard to the standards of width set for country roads, it is observed that if these are thought to be in excess of the real requirements, it must be remembered that these districts may not remain rural in perpetuity. "In the neighbourhood of London, where districts, now rural, are either becoming urban in character, or are likely to become so in the near future, sufficient width should be reserved for the traffic which is certain to arise. Unless definite and timely steps are taken to secure land for widening while it can still be obtained at reasonable cost, the mischief which has arisen in the past is sure to recur, and will only be curable at great expense." This is no more than sound common sense, applicable, we may add, to city streets as well as to suburban roads. Much of the traffic difficulty within London arises from streets having been made, even in quite recent times (as in the case of Shaftesbury Avenue), too narrow to provide for the increased traffic of the future.

There is another important point touched upon in this portion of the Report. The standards of width given above are suggested by purely utilitarian considerations, but there is another aspect in which the approaches to London may be regarded. In foreign countries it is recognised that "the

main avenues of approach to a great city should be invested with some degree of dignity, and should be pleasant as well as useful to the thousands who traverse them." This is a point of view to which we are still almost entirely indifferent in England, and we are indebted to the framers of the Report for thus accentuating it. It is to be hoped that this æsthetic suggestion, coming as it does in a document which is mostly of a severely practical character, will not be without its effect.

We have reproduced, in a reduced form, Plate II., appended to the Report, showing the proposals that are made for new arterial roads for access to and exit from London. These roads which in the original map are shown in red, are distinguished here by strong dotted lines. They appear curiously irregular in line, but their course is no doubt affected by local peculiarities of ground and of property demarcations which cannot be indicated on the map. Even with this reservation, however, the title "North Circular Road" looks rather odd as

applied to the wriggling piece of road to which it is appended; but we presume the true bearing of the adjective "circular" is that this is not a road of approach, but a lateral connection between two different lines of approach. For the purpose of considering the improvements in arterial roads, the districts around London have been divided into six compartments—N.W., N., N.E., S.W., S., and S.E.; and these are considered and explained under so many separate headings in the Report. In the S.E. compartment the additions are mainly in the way of loop roads intended to relieve points where the traffic is at present congested and where there are narrow stretches of road which cannot now be easily widened. The principle adopted is illustrated in the sentence on what is called "the Eltham by-pass":—"Traffic through Eltham is not heavy in winter, but it is considerable in summer, when its volume is more than doubled. A by-pass, about two and a half miles in length, constructed to the south of Eltham,



DIAGRAM OF GREATER LONDON SHOWING THE EXISTING MAIN ROADS RADIATING OUT OF THE METROPOLIS, AND PROPOSED NEW ROADS (SHOWN BY HEAVY DOTTED LINES).

would shorten the distance by a quarter of a mile, avoid the village" (where it appears that the road becomes narrow and crooked), "save the ascent and descent of a hill 50 or 60 feet in height, and open up land well adapted for building." This latter point is, of course, of great importance in connection with building interests, and any assurance that the new roads marked on this map would be made within a reasonable period would probably be a considerable stimulus to the purchase and laying out of building land, besides raising the spirits of some owners (and we know that there are such) who have purchased land which they find that they cannot profitably develop for want of adequate road connection with London.

Of the larger features of the scheme, it will be noticed that these include a new Western Avenue and Eastern Avenue. The reasons given for the Western Avenue, too long to quote here, should be studied in the Report; we may only notice the remark that "the open ground to the south of Wormwood Scrubs, now occupied by exhibition buildings, comes nearer to the City than any other vacant space within the County of London, and presents an opportunity for forming a good western outlet which should on no account be lost." Another paragraph from this section of the Report, which has, however, a general application, we may as well quote in full:—

"Sites along the course of the Western Avenue, within easy reach of railway stations, would be well suited for the establishment of Garden Cities; and, wherever land could be acquired on favourable terms, many parts of such an approach to London might be made attractive if sufficient width were taken in to admit of tree planting on both sides. This might be done with advantage in the case of all new or improved roads; the suggestion is made here, because the Western Avenue would be especially suited for such treatment, and the extra expense would be comparatively small."

This also is a suggestion which we hope will not be lost sight of.

There is so much that is important in other details of the Report, in relation to the future of London, that we may return to it, after giving this general outline of its purport. In the meantime we may say that this Blue-book is a document which is well worth the serious attention of all who possess, or who may think of acquiring, building property along any of the new lines of road proposed on the map.

The Institute of Architects.

THE meeting of the Institute last week was the occasion of the reading of a remarkable paper by Mr. Waterhouse, embodying a boldly conceived scheme for ensuring a working system of architectural supervision over all London improvements. The paper, printed on another page, speaks for itself. It is to be regretted that so important a paper received no adequate discussion—practically, indeed, no discussion at all. This was in part owing to the practice, which seems to be on the increase at the Institute meetings, of putting up distinguished laymen who may have been invited to the meeting, to lead a discussion on professional topics which in general they do not understand. The result in this case was that the First Commissioner of Works and the Chairman of the London County Council, who were called on to speak, occupied a considerable time in complimentary platitudes which had no relation to the real subject of the paper; and the Clerk of the L.C.C., neglecting the fact that this was a paper entirely dealing with the possible architectural future of London, spoke of the mischief done by architects in destroying the relics of the past; a point which, whether true in any sense or not, had nothing to do with the paper that had been read, and was a statement singularly unsuitable to be made in the rooms of the Institute of Architects, which has actually incurred the odium of being considered intrusive and meddlesome on account of its repeated and persistent efforts to secure the preservation of any ancient building threatened with destruction. Even Professor Pite, who always speaks on architectural subjects with the eloquence of an enthusiast, missed the point of the paper,

which in fact was never discussed at all. It is to no purpose to say that we have a great many beautiful buildings in London. So we have; the point of the matter is that we do not know how to place them, and that the placing of new buildings and the laying out of roads in connection with them is in the hands of official authorities who do not understand the subject, and who require architectural guidance; which guidance Mr. Waterhouse proposed to create and systematise. To ask the very officials who require that guidance to get up and lecture to the architects is merely wasting time. They should be invited to the meetings to learn, and not to teach; certainly not to assume (perhaps very unwillingly) the part of leaders in an architectural discussion.

Responsibility for Dry Rot.

A RECENT legal decision, in which, as reported in the Journal, an architect was held responsible for the extensive ravages of dry rot in a large building, revives two important questions of professional responsibility. These may be discussed upon their broad issues with reference to the general principles involved, and independently of the particular case which happens to have brought them once more into prominence. In the first place, it is to be noted that the architect—not the architect in the case under notice, but the architect as an abstract entity—now appears to have good reason for withholding his final certificate for a longer period than the builder is disposed to think necessary. It is apparently prudent to await such developments as the growth of dry rot! Otherwise an architect, having granted his certificate, is in danger of being held responsible for the appearance of dry rot, the occurrence of which might have been prevented if his instructions had been properly carried out. It seems clear, moreover, that, judging from recent decisions, a clerk of works can only be held responsible for comparatively small matters of detail, and that for larger concerns, such as the construction of floors, and the prevention of dry rot in them, an architect is held to be directly and fully responsible. The second question arises as to the architect's and the builder's responsibility for the appearance of dry rot. On previous occasions we have contested the tacit or the explicit assumption that dry rot can be absolutely prevented by taking what are supposed to be effectual precautions. But the assumption seems to take too little account of the fact that dry rot is a very insidious disease, and, on the whole, a rather obscure one, since it has not yet been made the subject of a thoroughly exhaustive investigation. In the present state of knowledge, all that is humanly possible may be done to prevent it, and yet it may occur. In parallel circumstances, in the domain of medicine and surgery, a doctor would not be mulcted in heavy damages unless it could be proved that he had acted negligently or unskilfully. Similar justice should be meted out to the architect; but at present, the view seems to be that when the building owner suffers loss and damage in consequence of the ravages of dry rot, he ought, in any case, to be able to recover from the builder or from the architect. It is true that a medical man may, in certain circumstances, be made to smart for the consequences of failure to exhibit due professional skill and care, and it would be idle to contend for more leniency for the architect or the builder; but what we feel entitled to protest against is the disposition to assume that in every instance dry rot is preventable, and that therefore in every instance of its occurrence the architect or the builder should be held liable for the damage sustained by the building owner. Surely there are many circumstances of location, site, soil, surroundings, that are in a high degree favourable to the development and spread of the disease; and these points, for lack of ascertainment concerning them, are seldom or never brought before the courts, except in a diffident and tentative way. Of recent years, dry-rot cases have been so frequently the subject of litigation, and architects and builders have suffered so heavily in consequence, that, on

several occasions we have felt impelled to urge upon the R.I.B.A. the desirability of entering upon an exhaustive investigation of the subject in all its bearings. We take leave to reiterate the plea. Unless woodwork is placed upon a more equitable basis, architects will probably be inclined, in self-defence, to abandon its use as far as possible in favour of other materials which are at all events free from this peculiarly harassing disqualification of timber.

The "Majestic River" and the Projected Bridge.

AT the banquet given at the Guildhall last Wednesday night to the municipal representatives from Belgium, M. Armand Hubert, Belgian Minister of Industry and Labour, remarked, in responding to a toast, that what struck the visitor to London more than anything else "was the immense activity to be seen on all hands, and the magnificent view to be obtained on both sides of that majestic river the Thames. The splendour of the public buildings was most imposing." On such occasions the fine wine of graceful compliment is expected to flow with generous freedom. Nevertheless, there is always a choice of subjects; and M. Hubert's choice ought to impress the civic authorities who were his hosts with a keener sense of the responsibility that rests upon them to deserve this high praise. We are bound to believe that he was not speaking ironically with regard to the majesty of the Thames and the magnificence of the view on both its banks, although hitherto these splendours had escaped special notice; but we cannot altogether subdue a disturbing suspicion that perhaps he saw these things with a very friendly eye, and therefore rather as they might and should be than as they are. But the pertinent question is: How will the Corporation construe these unearned encomiums? With smug satisfaction in London as she is built, and a confirmed resolve to keep muddling along? Or will the City Fathers take to heart the more essential moral that it is laid on London's conscience to deserve such praise? The affair of the St. Paul's Bridge gives them a splendid opportunity of paying this debt of honour—or, on the other hand, of increasing it beyond redemption. Surely a "majestic" river deserves a majestic bridge.

"Good-enough" Schools.

IN the course of the debate on the Address in the House of Commons last week, Mr. Walter Runciman, President of the Board of Education, answering an attack on his Department, claimed that they not only were alive to the heavy cost of education, but had done something towards reducing it. "One of their troubles," he is reported as having said, "was to prevent local authorities from spending too much on buildings. All over the country there was a tendency, fostered by both builders and architects, and to some extent by members of local authorities, who were proud of fine public buildings, to put up schools that were far too costly. Although £20 a place was the standard in London, buildings just as good for the purpose were being put up at Croydon for £13 a place." As to the cheaper buildings being, as a rule, "just as good for the purpose," "I doubt it," said the Carpenter, and shed a bitter tear." Mr. J. M. Henderson, the Member for West Aberdeenshire, may or may not have been speaking ironically when he said, "They could not expect fine streets, parks, swimming baths, and the best sanitary arrangements, without paying for them," but at any rate the proposition is incontrovertible; and it is one of those truisms of which a timely reminder is occasionally very valuable. Without laying undue stress on Mr. Runciman's insinuation of interested motives on the part of architects and builders—although we cannot help thinking that the allusion was tactless and gratuitous—we feel impelled to protest against the implied encouragement of cheap schools, or cheap public buildings of any kind. The architectural interest in the matter is precisely that which Mr. Runciman attributed to the local authorities who are "proud of fine public build-

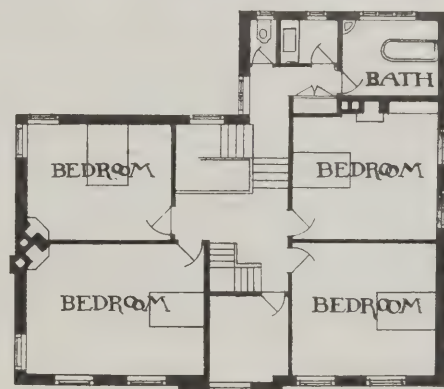
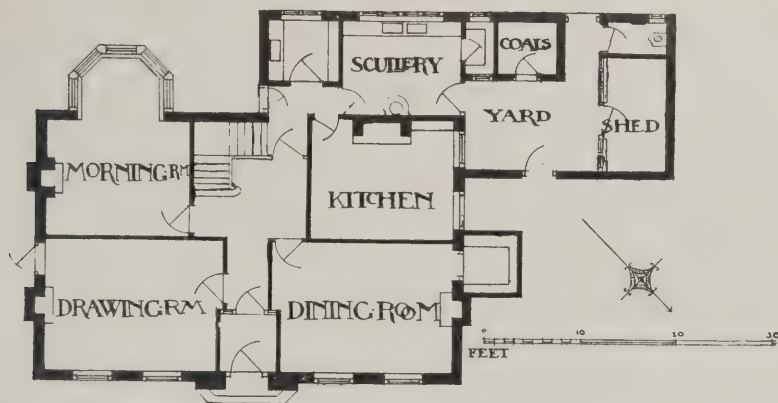
ings," and we fear that the spirit in which Mr. Runciman is approaching the subject is likely to be intensified into a meanness of view which may go very far beyond his own intention; with the deplorable result that poverty-stricken and ignoble schools will be multiplied throughout the country. It cannot be supposed that a responsible Minister holds the degrading view that any sort of "good-enough-for-the-purpose" building will do for a school; but that is how, in many instances, his pronouncement is likely to be interpreted; and it would be wise for him to take the first opportunity of modifying the mischievous impression that his utterances on the subject have undoubtedly created. The saving that is likely to be effected on skimmed and stinted, or "good-enough," school buildings, in which only the miserly could "take a pride," is so distinctly of the pennywise order that we have no hesitation in urging upon the Board of Education the plain duty of discountenancing instead of fostering such a niggardly, penurious policy, and of at once making their position on this point clear and unmistakable. At present the impression is that the Board of Education fosters cheese-paring. The declaration that "One of their troubles was to prevent local authorities from spending too much on buildings" will certainly convey that impression. It also suggests that some at least of the Board's troubles seem to be of their own creation, and do not greatly dignify their office.

Ancient History at the Royal Academy.

THE Dean of Gloucester, who is Honorary Professor of Ancient History in the Royal Academy, gave a lecture on Tuesday last week on "The Merovingian Abbey of St. Martin of Tours," which he described as "the model of the great churches of the Middle Ages." It is not the model of them any more than the Basilican type of church in general is; and considering that the church, along with a great part of the city of Tours, was destroyed by a fire in the year 999 and not a vestige of it is left, it is rather difficult to see how we can know how far it was a model. The lecturer said there were enough descriptions left practically to restore the church, but he certainly did not furnish us with anything precise enough to justify the restorations (by a French architect) which were shown on the screen; one very peculiar feature in the restored plan, the two internal perches blocking up both aisles near the west end, ought to have had some very precise documentary evidence to justify it, but none was forthcoming. A great deal of the history about the formulation of the church, and the persons connected with it, was interesting in itself, but hardly connected with the objects of the Royal Academy. In conclusion the Dean wandered from his special subject to make a rather eloquent plea for more colour in architecture, especially in reference to the glorious display of stained glass in the late choir of his own cathedral; but when he asked us to believe that the Norman nave was also originally a blaze of colour we are rather more sceptical. There may have been a certain amount of picking out, in colour, but it is doubtful if we should have liked it, could we have seen it. Butterfield carried out his idea of the colouring of a Norman interior at St. Cross; but the result, to say the least, is not happy.

Training and Efficiency.

MOVEMENT with the object of impressing the public with the great need for more systematic means of securing business efficiency has been for some time promoted by successive Lord Mayors of London, and is at length assuming definite shape. A conference, to be held immediately in London, under the presidency of the Lord Mayor, at which important resolutions will be proposed calling on the Government to establish a national system of industrial, professional, and commercial training, to which children shall pass as a matter of course, and without interval, for a definite period, in order that they may receive efficient preliminary training for the particular calling for which they seem best



HOUSE AT FARNHAM, SURREY HAROLD FALKNER, ARCHITECT.

fitted, such training to be under fully qualified instructors, and the cost to be borne by the National Exchequer. In view of the immense advantages which Germany has reaped from a similar system, the large outlay that is likely to be involved should be thoroughly justified. That the great building industry would welcome some thorough system of training is evident from the constant complaints of architects, employers, and workmen that craftsmanship is decaying, that machine methods are killing artistic feeling and robbing the workman's occupation of its former interest, that the modern competitive system is rendering employment so irregular, and tending so constantly to throw the older workmen out of employment, that men are no longer able to put their hearts into their work. A well-conceived national system of training would remedy some of the trouble by keeping out the least fit and raising the skill and competence of those admitted. Incidentally such of those elder men as are the depositaries of invaluable experience could be employed as instructors, and in many ways pride in craftsmanship would be revived and

fostered. Most practical men, however, are convinced that technical schooling alone, no matter how thoroughly it may be conceived and conducted, must always fall far short of the ultimate object of producing the complete craftsman. It must be supplemented by training in the office, on the works, and in the shops. Therefore, the promoters of the movement have been wise in enlisting the aid of accredited representatives of the various industries—in other words, of asking the men who know; and we understand that in this respect the architects and builders have not been overlooked.

A College of Mediæval Art.

Some years ago, when the scheme for opening a new street from Pavement to Piccadilly, York, was initiated, Mr. Frank Green purchased the historic house, Treasurer's House, which was doomed to be removed to clear the way for the new thoroughfare. Mr. Green had every part of the building carefully taken down and numbered, and removed to a vacant



HOUSE AT FARNHAM. HAROLD FALKNER, ARCHITECT.

The two houses at Farnham here illustrated are interesting as examples of work carried out strictly with a view to economy, and in harmony with the requirements of an average household, yet possessing architectural character, more particularly the house illustrated on the preceding page. Mr. Harold Falkner, of Farnham, was the architect.

piece of ground near the east end of the Minster, opposite St. William's College. The original intention was to re-erect the house on the site referred to, but for various reasons this has not been carried out, the chief one being that it is desired to leave the vicinity of the Minster and St. William's College free from anything that would obstruct the view from every point. A new suggestion has now been made for the disposal of the fabric of Treasurer's House. At the annual meeting of the Yorkshire Philosophical Society last week, it was stated that Mr. Frank Green was willing to hand over the material (which cost about £1,000) to the Society for re-erection in the grounds for use as a mediæval museum, in connection with Professor Stoughton Holbourn's scheme for a College of Mediæval Art for York. Not only would Mr. Green hand over all the material, but he would also be prepared to contribute £500 towards the cost of re-erection. Dr. Tempest Anderson said in order to carry out the proposal properly another £1,000 would be required. If they got that they would proceed with the re-erection of the house probably near the Bowling Green. It would form the nucleus of Professor Holbourn's scheme.

Royal Institution Lectures.

MR. JACKSON'S second lecture, on Saturday last, dealt with the Italian Byzantine school of architecture, as illustrated mainly at Ravenna, and with Italian and German Romanesque. The first-mentioned school included the gradual adoption of the Byzantine style of detail in combination with the basilica plan, as at Parenzo, a basilica church with completely Byzantine detail. The conquest of Italy by Justinian led to the erection of San Vitale at Ravenna on a Byzantine plan, with a strong resemblance to the church of SS. Sergius and Bacchus at Constantinople. On these churches of the Byzantine type the decoration was mostly in mosaic; little use was made of sculpture, and little of the human figure, the designs consisting more of decorative patterns, in which, however, birds and vine leafage were often interwoven. Venice being the only Italian city which adhered to the Eastern Empire

after the fall of the Exarchate, St. Mark's was purely a Byzantine church. The beginning of the Romanesque and the decline of Byzantine influence was apparent in the less decorated round-arched style of such churches as those of Pisa, Lucca, Pavia, and S. Ambrogio at Milan. Along with this architecture the campanile in connection with the church became an occasional feature, and it was pointed out what a very important effect the presence or absence of church towers had upon the architectural aspect of a city. The galleried apse of the German and some of the Italian Romanesque churches was mentioned and illustrated as a characteristic and charming feature of the style. Special mention was made of Charlemagne's church at Aix-la-Chapelle, as a design obviously based on that of San Vitale, though superior constructively in the manner in which the aisle vaulting is contrived to distribute the thrust of the centre dome on the outer walls. In conclusion, Mr. Jackson urged on his audience the necessity, if they would understand the development of architectural style, of looking to the structural problems which underlie the merely superficial aspect of buildings. The Latin basilica churches with timber roofs, for instance, were easy to construct, but as soon as the attempt was made to build a solid roofing, either in the form of a dome or a vault, there began a fight with difficulties of construction, out of which developed a new style; for architectural style arose out of construction, and not out of any mere caprice in the taste of the builders. To architects, of course, this is (or should be) a truism, but it is a point which cannot be too often impressed on general audiences, the general public being still apt to regard architecture only from the outside, and to imagine that changes of style were a mere matter of taste. It is a great pity that there have not been larger audiences to profit by these very instructive lectures on a peculiarly interesting field of architectural history; the attendance was, indeed, quite as good as it generally is at the Royal Institution afternoon lectures; but that is not saying much. The concluding lecture, on "Romanesque in France and England," will be given next Saturday.

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

"Civitas" and the Soane Award.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The occasion of the withholding of the Soane Award has caused so much comment by, and so many enquiries from, personal friends, and the young men of architectural profession, that some explanation seems to be called for.

The President and Council claim that I received "substantial" help, and I have freely acknowledged that I did receive some help in colouring, and also in the setting up of a rough draft from my own sketches for the perspective, the latter being work which I considered was of a purely mechanical nature. The responsibility, therefore, for the withholding of the Soane, is entirely my own, and I wish to take all blame. I have lost a much coveted prize, but I am still very young.

In any case, the loss of the Soane is not the bitter disappointment to me that it might have been to some, for my competing at all was a mere chance accident I was already a student in Paris when the programme was issued, and it occurred to me that I might as well work upon this project as any other. Moreover, when I read the programme I realised that the award would probably go to the man who could convert a civic ditch of 120 feet into a dignified water approach, for only thus could the scale be obtained which could in any case express the status of a capital city. I thought when I had solved this problem that I would probably be well in the running.

Now, as to the help I received. The fact that I prepared my early studies during the summer vacation absolutely precludes any question as to the authorship of the design, so the whole objection naturally revolves upon that of draughtsmanship, and here I may further add that I did not receive any assistance whatever until the Thursday preceding the Wednesday, the day of sending in. This shows that I did not even anticipate any help. At this stage all the drawings were in line, and I have the assurance of responsible authorities that had I sent in my drawings at this stage I should still have been the winner. Had I for one moment anticipated that so much value was placed on gilt and Chinese white I would have washed out every trace of it.

Only on one point do I offer any criticism of the Council's action, and this for awarding me the Soane in face of the help rendered by my friend M. Carlu, whose every touch is unmistakable, and was unquestionably recognised by Professor Reilly, who delivered the criticism. Speaking for myself, it certainly never occurred to me that the snow on the perspective (mostly put on with a tooth-brush), the amusing political meeting on the side façade, or the smoke, so cleverly indicated above the plan, of the steamer (whilst undeniably adding interest to the drawings) would be classed as architecture, and I am certain that it will vastly amuse my fellow students at the atelier that the R.I.B.A. attach so much importance to the merely "chic," and equally surprise them that so little encouragement is given to the more important qualities of imagination and true architectural scholarship, which are surely the only guarantees of a student's future.

PRENTICE MAWSON.

London Bridge Improvement.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—As a lover of London and one who has for twenty years passed almost daily over London Bridge, I have read with pleasure the announcement that a scheme for improving the approach into the City from London Bridge is likely to be carried out. The outline you give is very promising as to the general effect of this long-needed improvement, particularly as to the design of the building facing the beautiful hall of the Fishmongers' Company. It is to be hoped that the character of any new buildings to take the place of those facing the bridge (i.e., behind the statue of King William) will be duly considered.

There is one point, however, which I would very respectfully question, and that is the suggestion of arcades over the footways. I venture to think this would be a mistake, as such an arrangement

would completely shut out the view which pedestrians would otherwise obtain of what should be a very noble vista.

S. S. BRYANT.

London, E.C.

Stresses in Angle-Cleat Rivets.

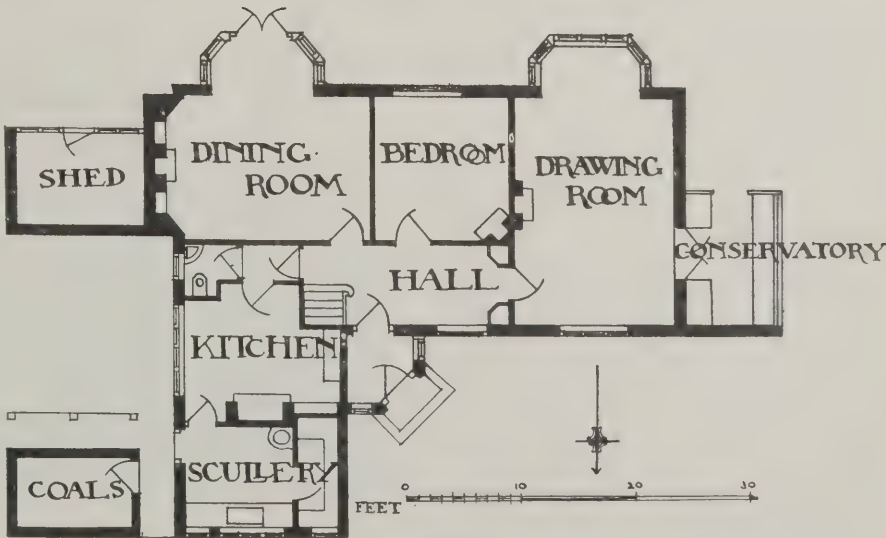
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to the article in your issue of February 1st, on "Stresses in Angle-Cleat Rivets," by Mr. Ewart Andrews, I note that the load P transmitted from plate B to plate A would act through one corner of the plate (viz., at P). This would, of course, be the case if the plate were resting on this corner, but in a cleat the other leg or flange is always bolted to the supporting plate.

Now it is evident that plate B can be connected to plate A by a single rivet, which would carry the specified load providing the diameter be big enough, and that in this case the cleat will act as a cantilever, and the bending moment will be taken up by the bolts on flange of cleat, and that the one rivet will be in simple shear. This will also apply to the case where several rivets are used.

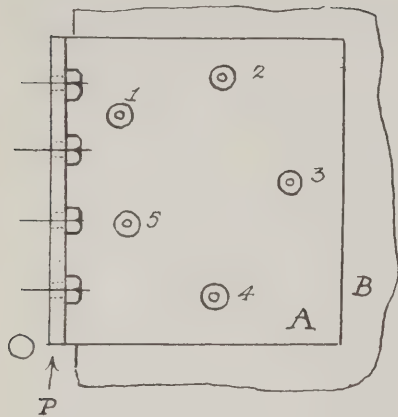


Entrance Front.



Ground-floor Plan.

HOUSE AT FARNHAM. HAROLD FALKNER, ARCHITECT.



Using the same notation as in the article, the sketch here shows how the cleat would be in practice.

Let I = moment of inertia of bolts about axis o .

f = safe tensile stress per sq. inch on bolts.

y = distance of outside edge of bolts furthest from o .

Then taking the cleat as a cantilever we get

$$\frac{fI}{y} = Px$$

if $\frac{fI}{y}$ is greater than Px the rivets 1, 2, 3, 4, 5, will be in simple shear.

Supposing $\frac{fI}{y}$ is less than Px , then we have Px

$$\Sigma kar^2 = \Gamma x - \frac{fI}{y}$$

In the particular instance of the cleat from Dorman Long's book mentioned in the article there are four $\frac{3}{4}$ diameter bolts up the flange. The moment of resistance of these about P is about 55, and Px only 19.7, so that if plate B had one large rivet in place of the five shown, the joint would be quite safe, and the only stresses on the rivets would be direct shear.

R. GILLET.

[I am not quite sure that I follow Mr. Gillett's objection to the treatment given in my article. If, however, he suggests that, because the rivets might be replaced by one rivet if big enough, there will be no eccentric stresses on the rivets, then I think he is in error. My treatment does not assume, as suggested in the letter, that the force acts through one corner of the plate. I take it as acting along the edge of the cleat as it should be. The question of the tensile stresses in the bolts is a separate problem, which does not affect the shear stresses in the rivets. As a simple illustration that there must be eccentric stress in the rivets, it will be noted that with only one rivet the cleat would theoretically turn freely on the beam; but with more than one rivet this turning would be prevented, and additional stresses would thus be induced.—EWART S. ANDREWS.]

Hedge and Ditch Dividing Properties.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In a recent issue of the "Architect's and Builders' Journal," one of your correspondents asked for information as to the usual allowance for the ditch to a hedge dividing properties of different owners.

The practice varies in different parts of the country. In the north the allowance is five quarters, a quarter being 9 in., and it is measured from the centre line of the hedge. Other local allowances are six links from the centre of hedge and four feet. These of course are the same to $\frac{1}{2}$ in.

So far as the writer is aware, there are no recent rulings of court on the subject, and as the land containing the ditch is not available in the ordinary way, except in the case of building development, the matter of an inch or two is not of great importance, the local custom being agreed to in practically all cases.

WILFRID WISE, B.Sc.Lond. (Eng.).
Durham.

THE SPRING CLEANING SUPERSTITION.

Attention is once again being called to the inconvenience and suffering that are caused by the "spring-cleaning" mania. Mr. Munford, chairman of the Paddington Distress Committee, states that in his district there are at present about 3,400 painters unemployed, and the bitter irony of the situation is that in about two months' time many of these men will have probably to work 12 or 15 hours a day to meet the sudden rush. He urges that if householders would have a certain amount of their internal decorations carried out now, even at a little discomfort to themselves, it would relieve a great deal of the unnecessary distress now prevailing. This well-meant appeal, however, is likely to have less effect than the present indications of an early spring; for the cult of gregarious spring cleaning is a sort of deeply rooted pagan superstition, or revered religious ritual, and those who are under its spell seem to be quite impervious to reason. There are, however, it must be in fairness acknowledged, some quite practical objections to beginning much earlier than is at present customary. There is, for instance, the fear that if the cleaning and decoration are done before the winter is well away, the work may suffer from the grime and slush of which that season is so prolific; and then the discomforts of "having the painters in" are greatly intensified when the temperature is low, and the days begin late and end early. There is, however, much work to which none of these objections apply with equal force, and this is often quite unnecessarily postponed until the "painting season," mainly because the lay mind is obsessed by a vague but ineradicable notion that that is when it ought to be done.

THE ST. GEORGE'S HALL CONTROVERSY.

The Liverpool King Edward Memorial Committee met on February 14th to consider the recommendation of the Finance Committee with regard to the site for the proposed statue. The Finance Committee suggested that, instead of placing the statue in a central position in front of the southern portion of St. George's Hall, in accordance with Mr. Norman Shaw's design, there should be two sites, and that the equestrian statue of King Edward should be put on the site nearer Lime Street. The Memorial Committee decided to take the opinion of the experts on the proposed variation of Mr. Norman Shaw's design.

It is believed that this proposition will be acceptable to all except a few uncompromising sticklers for "the wall, the whole wall, and nothing but the wall." Mr. Lionel B. Budden, one of the most trustworthy of the many writers upon this subject in the Liverpool Press, thought it 'practically certain that all serious opposition would be withdrawn' if the Memorial Committee agreed to adopt the suggestion of placing two balancing equestrian statues, one at either end of the podium; but he adds that 'the retention of the oblique steps would, of course, constitute an insuperable barrier to any thought of compromise,' pointing out that 'these steps, without the central group which supplied their *raison d'être*, are more irrelevant . . . than those in Mr. Shaw's scheme, which were cloaked to some extent by the statue.'

Mr. Budden, in an article on the subject in the issue of the "Architectural Review" for November last, deemed it probable that the question of providing means of access to the south portico had from the first proved one of Elmes's most serious difficulties; but at the time of his death, in 1847, nothing definite had been determined. A print published in 1853, and here reproduced, is of special interest as showing two equestrian statues in positions presuming an arrangement that is almost identical with that which is now proposed as a final solution of the problem.



The approach shown to the south portico is possibly a conjectural completion of the work in progress at the time. This print has evidently inspired the present proposal to place an equestrian statue at each end of the podium.

PRINT PUBLISHED IN 1853 COMMEMORATING THE OPENING OF ST. GEORGE'S HALL, LIVERPOOL.

THE LIGHTING OF PUBLIC LIBRARIES.

The artificial lighting of public libraries was the subject dealt with at last month's meeting of the Illuminating Engineering Society. Three papers were read—by Mr. J. Duff Brown, borough librarian, Islington; Mr. L. Stanley Jast, chief librarian of the Croydon Public Libraries; and Mr. John Darch, F.S.I.

Mr. Duff Brown, in the course of his remarks, said, with reference to newspaper stands or slopes, that if the lighting for each were arranged independently it meant that the fittings became fixtures, a disadvantage always associated with wiring which had to be conveyed along the floor and attached to tables or stands. For this reason his own preference was in favour of having the lights hanging from the ceiling independently of furniture, so as to obtain complete adjustability whenever required. "There is hardly any library in existence which has not at some time rearranged its fittings and furniture, and it is often difficult to make alterations without overhauling the whole of the lighting apparatus."

Mr. Stanley Jast, while not questioning the undesirability of point lighting, said that in most reference libraries it was a necessary evil in connection with the reading-tables. "The question then arises as to whether suspended lights over, or standards on, the tables are to be preferred. If a standard is chosen, what is the best height above the table, what is the best design of standard, and, more important still, what is the best form of shade? The only scientifically constructed shade is, I presume, the Holophane; my objection to it for table-lamps is that you have a bright light immediately above the eyes, not, of course, so accentuated as in the case of the unshaded lamp, but sufficiently annoying, nevertheless. After trying myself several varieties of shade, I prefer, on the whole, the ordinary cone-shaped opal shade, as deep as it is possible to get it, so that the reader seated at the table is unable in an ordinary position to see any part of the lamp itself."

Turning to the problem of lighting gangways between bookcases, Mr. Jast said this meant lighting an average width of from 3 ft. to 4 ft., and at the same time lighting two vertical walls of books, covering an average width of, say, 9 ft. 6 in. to 10 ft., with an average height from the floor of about 8 ft. "I do not remember to have seen an absolutely satisfactory solution of this problem, and I am inclined to doubt if such a solution is possible. But I have a suggestion to make, which seems to promise better results than any yet attained. The difficulty is to light the lower half of the case properly. My idea is to do this from below, as one lights the lower half of a stage by footlights. I would cut a longitudinal trough in the floor, parallel to and at a suitable distance from the case, cover it with glass of the necessary thickness, and in this trough I would place lamps, with reflectors so arranged that the light would be thrown directly on to the case (see Fig. 1). Or instead of the trough, the lamps might be hidden in the step which is found in some libraries at the bottom of the case. I illustrate this arrangement in Fig. 2, with an alternative of lighting the upper part of the case by Tubolite in place of the centre drop."

Mr. John Darch said the worst general lighting in libraries was that which was most common, namely, the placing of plain opal shade pendants at equal distances apart, and about 8 ft. 6 in. from the floor. By this arrangement the ceiling and upper

half of the walls were in gloom, yet the glare of the lights was experienced in every part of the room. Mr. Darch disapproved of downward or other reflectors in general lighting, and said that a room was better lit when ceilings and walls were used to reflect the light. For low ceilings the lamps should be shielded by opaque or semi-opaque screens of the form shown by Fig. 3, by means of which a good general illumination could be secured without the lights being seen.

With regard to reading-desks and tables, Mr. Darch emphasised the importance of having a separate light with a shade for every reader, and expressed the opinion that such lights should be adjustable and under the control of the reader, so that each person might suit his own desires or needs as to the position of the light; readers, too, should be left to switch off their own lights, which was a system of economy, and not one likely to cause an extra expenditure. By contrast Mr. Darch said: "I have been in the South Kensington Library when every light has been going with scarcely a reader; I have seen nearly all the Patent Office tables empty; I have seen but five readers in both reference library and newsroom of the Guildhall; yet in each case all the lights were on, as though they were being used. Is this economy? If, on the other hand, my proposal were adopted, the reader would walk into a quietly lit room, select his table and switch on the light, which would be concentrated on his book. When he left his desk he would, as a matter of ordinary good behaviour, switch off his light; but should anyone fail to do so, the assistants could easily remedy the omission. All this implies that each reader should have an apportioned space or desk. It is done at the British Museum with a width of

4 ft. 3 in., but 3 ft. 6 in. should be ample for simple reading.

"With regard to news stands, the rule appears to be to distribute plain pendants throughout the room, regardless of the positions of the stands or desks, and, consequently, the amount of light in foot-candles reaching the newspaper is often ridiculously small. At the Guildhall and at other libraries the reader is able to admire the form of his own shadow in front of him, and has to read through the gloom of it. At Wandsworth, Kensington, and many other places a lamp is suspended directly over the stand—the very worst position—for by reason of the extremely oblique direction of the rays the illumination is very small, and reading is rendered still more difficult in consequence of the puckering of the paper. The accompanying sketch (Fig. 4) illustrates this. A is a 30 c.p. lamp, the downward radiation of which is, however, only 18 c.p. The lamp is 3 ft. from the centre of the desk at B, and the angle of incidence ABC is 10 deg.; therefore the illumination of the slope is $\frac{18 \sin a}{3^2} = 0.34$ foot-candle. What a

miserable result from a 30 c.p. lamp, and what a waste of light!

"The best arrangement I have seen is at Cripplegate. The newspaper stands are 8 ft. long (for two newspapers on each side), and 2 ft. from the end of each—that is, in the centre of each newspaper—is a bracket lamp at about the level of the top of the stand, and projecting 15 in. (see Fig. 5). A light of about $3\frac{1}{2}$ foot-candles is thereby obtained from only an 8 c.p. lamp. Here you have a splendid light for a small expenditure of current, and independent of the crumpled paper. The lamps, however, are painfully visible whichever way you turn—a defect which might easily be corrected by having deeper shades and directing them towards the newspapers as shown by Fig. 6."

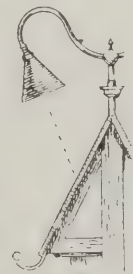
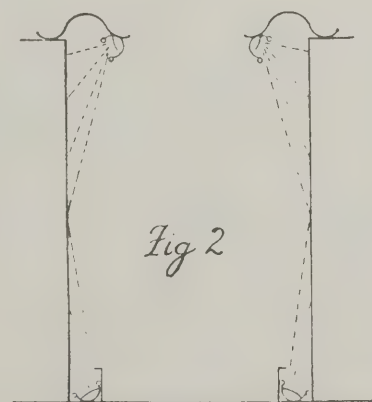
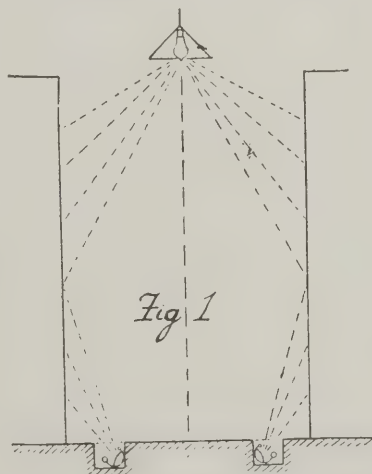


Fig 6

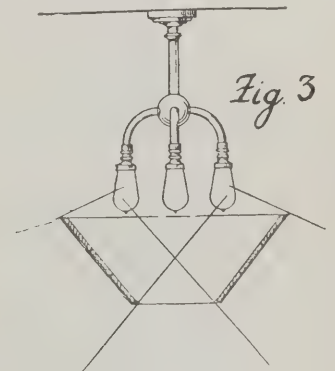


Fig 3

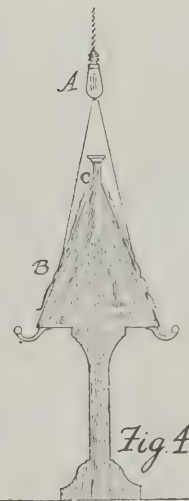


Fig 4

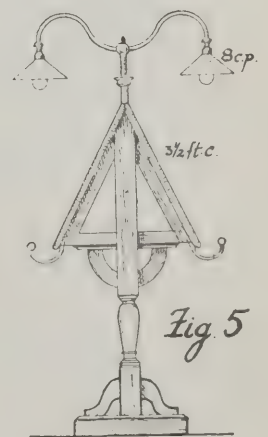


Fig 5

ARCHITECT'S CLAIM FOR BREACH OF AGREEMENT.

An action was tried before his Honour Judge Ruegg at the Birmingham County Court last week in which Mr. J. J. Hackett, architect, of Birmingham, sued Mr. G. Hiorns, of Ward End, for damages for breach of contract.

It appeared from the evidence that in 1907 the Birmingham Corporation were in negotiation with the various property owners for acquiring various strips of land on either side of St. Margaret's road, Ward End, for the purpose of widening same. Prior to being approached by the defendant, the plaintiff had already negotiated for two property owners for the frontage of about 300 yards extent, and in each case the fees due to him for such negotiations had been paid by the Corporation. The defendant appears to have been particularly anxious that under no circumstances should he be liable for any fees, and to this the plaintiff assented, the only stipulation being that if the matter was carried through he should carry out the negotiations and other work incidental thereto, and be allowed the opportunity of obtaining his fees from the Corporation. Plaintiff accordingly prepared plans, which were amended from time to time to conform to the requirements of the defendant, and ultimately prepared working drawings of what was required. The matter was then shelved for a time owing to the adjoining owner declining to relinquish a portion of his land for the purposes of road widening, but was re-opened in the early part of 1910. The defendant then, however, instead of engaging the plaintiff to complete the negotiations, instructed a builder to get out plans and estimates, and these were ultimately accepted and the scheme carried through on same. The plaintiff gave evidence at length and was supported by Mr. J. Coulson Nicol, A.R.I.B.A., of Colmore Row, as to the value of the work done. Mr. Lee, the building surveyor, also

gave evidence as to the interviews with plaintiff. For the defendant it was contended that it was expressly stipulated by the terms of the contract that defendant was not to be liable to pay plaintiff, who was to look to the corporation for payment; also that the negotiations of plaintiff went off, and that it was a new scheme opened in 1910 which was ultimately carried through.—His Honour, in giving judgment for the plaintiff for £20, held that defendant, in instructing other agents to complete the negotiations, had broken the agreement, and prevented plaintiff receiving payment from the corporation for his services; also that the negotiations of 1907 were merely shelved and reopened in 1910.

LONDON MASTER BUILDERS' ASSOCIATION.

The usual monthly meeting of the Council of this Association was held at Koh-i-Noor House, Kingsway, W.C., on Thursday, February 16th, under the chairmanship of Mr. Leonard Horner (President).

The audited accounts for 1910 were received from the Finance Committee, and will be submitted to the general meeting on Monday, February 27th.

The Organisation Committee's report was received, and although the matter is proceeding slowly, those districts that have been taken in hand have produced good results, and many builders have become members. It is now hoped to proceed with the work of organisation must faster.

It was decided to supply copies of the "Architects' and Builders' Journal" to the ordinary members at the expense of the Association.

Members were reminded that the annual dinner will take place on February 23rd, at the Hotel Metropole.

Other matters of interest were discussed.

THOS. COSTIGAN, Secretary.

SCHOOL BUILDING IN LONDON.

The Education Committee of the London County Council have prepared their estimates for the year ending March 31st, 1912, next, from which it appears that the following sums will be spent on capital account for new buildings:—

<i>Elementary Education.</i>	
Provision of new schools	£150,000
Additions and alterations to schools	120,000
Modernising and improving schools	88,650
New day schools for the blind, deaf, and defective	40,000
Alterations to schools for blind, deaf and defective	10,000
Industrial schools	10,540
Total	£419,190

<i>Higher Education.</i>	
New secondary schools	£68,050
Training colleges	12,000
Technical institutes and schools of art	69,000
Grants in aid of sites, buildings and equipment	27,395
Total	£176,445

<i>General.</i>	
Buildings, divisional offices	£ 640
General provision of sites and buildings	50,000
Sites to be acquired for new buildings under provisional order (if confirmed)	80,000
Buildings for places of detention	3,400
Total	£134,040

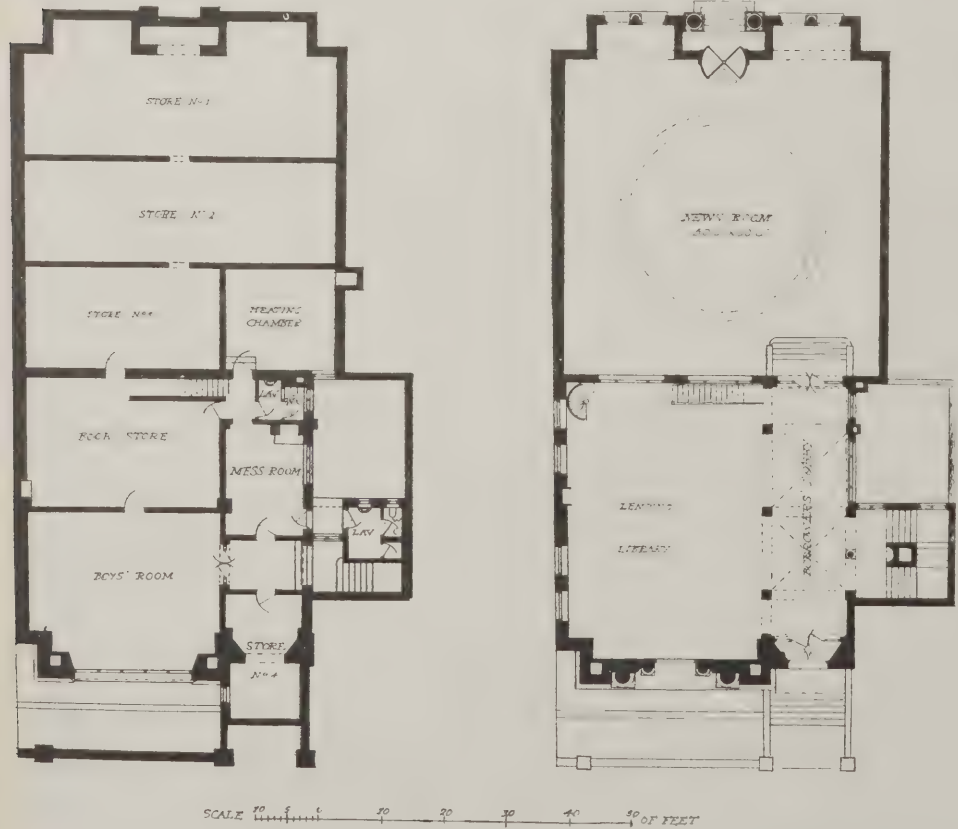
The aggregate total is £729,675. The provision for new elementary schools is £54,715 less than that for the current year, but the estimate for building enlargements is £32,820 more.

The average cost of a new elementary school place is usually put approximately at £30, i.e., £10 for site, and £20 for building and equipment. The estimates are, however, framed on the estimated cost of each individual site or building included therein. With regard to the buildings, the cost of building the 8,650 places has been estimated at £23 3s. 7d. a place. In connection with this figure, however, it has to be remembered that 6 out of the 16 proposals involved are "central" schools, and that in other cases the estimated cost includes the cost of domestic economy and other centres to be erected on the same site as the new school. The average cost per place of the six schools where none of these complications arise is £20 1s. 11d.

OUR PLATE.

The Harrogate Public Library, erected from the design by Mr. Henry T. Hare, forms part of a scheme of municipal buildings which yet remain to be built. The library is faced with York sandstone, and fireproof floors are fitted throughout. The heating is by low-pressure hot water, and the joinery and fittings are of wainscoat. The library is conducted on the open access principle.

We learn that Mr. Mervyn E. Macartney, B.A., F.S.A., F.R.I.B.A., architect to the Dean and Chapter of St. Paul's Cathedral, has been appointed to a similar position in connection with Durham Cathedral, in succession to the late Mr. C. Hodgson Fowler.



PUBLIC LIBRARY, HARROGATE [HENRY T. HARE, F.R.I.B.A., ARCHITECT.

MORDEN COLLEGE CHAPEL.

Morden College, Blackheath, founded by Sir John Morden, was built in the year 1695, and is a quiet and dignified example

in axial line with which, on the other side of the quadrangle, is the chapel, the entrance to which is characteristic of Wren almost at his best. A pair of fine doors of carved and panelled oak are set within

Grinling Gibbons. The proportions and details of the pulpit reveal Wren in his most masterly mood. The panels are of matched cross-grain, with wainscot inlay, one of them being decorated with the



THE CHAPEL OF MORDEN COLLEGE, BLACKHEATH, LONDON, S.E.

of Wren's work. The building is in the form of a square, colonnaded towards the quadrangle. The entrance is gained through a centrally placed doorway forming part of a pedimented central feature,

carved architraves, pilasters, and a pedimented head of fine detail, composition, and workmanship. Inside the chapel, the fittings are of panelled oak, and over the altar there is some interesting carving by

founder's monogram. The barrel-shaped ceiling of the chapel is plastered, and a gallery at the western end contains the organ; the whole interior conveying an instant impression of serene dignity.

THE ARCHITECTURAL DEVELOPMENT OF
LONDON.

BY E. A. RICKARDS, F.R.I.B.A. AND PAUL WATERHOUSE, M.A., F.R.I.B.A.,

At the meeting of the Royal Institute of British Architects held on February 13th, Mr. E. A. Rickards and Mr. Paul Waterhouse, in their respective papers, handled a common subject in characteristically varied styles; the former being rather destructively critical, while the latter detailed a rather elaborate constructive policy.

By E. A. Rickards, F.R.I.B.A.

MR. RICKARDS contended that if London is at any time to affect the large manner of the Continental and American city, she has little as a basis to work upon; certainly no centre of interest such as the buildings and gardens of the Louvre and the avenue leading from them. Such chances have consistently been lost sight of or ignored from Wren onward. There is abundant evidence that we have never cared for development in the literal sense of the word. The jealous way in which the very large amount of open space in London has been guarded is a large part of the proof. That these spaces should be put in some sort of order and even be rendered available for traffic does not necessarily entail any loss of area or any encroachment in a tangible way on such preserves. This is a superstition which will have to be mastered if we are ever to create any considerable spheres of influence and character in our new city, any effect of space through which a motive may be repeated and developed in all its possibilities of form and suggested harmonies. We allow no hands to be laid on the enclosed squares which could be so exploited in certain neighbourhoods such as Bloomsbury and Kensington, yet the whole artistic character and general design of the surrounding buildings is set back and in many cases eternally ruined by exotic material in the worst design. Even in the neighbourhoods of the most marked character and charm, which bear the stamp of a real and definite period, such as portions of Mayfair, the exotic design of the Flemish gable and other vagaries are evidence of a total lack of evolution from a very beautiful motive left us by the eighteenth century. The existence of so many accomplished American designs openly derived from the suggestions of this period testifies to the possibilities we have let slip in developing these districts of London in a manner entirely harmonious with the character so definitely imprinted on them, and yet imparting a very modern feeling in the result. I believe the Bloomsbury streets and squares are quite a field of study for the Americans, and many a beautiful piece of treillage ironwork and refined piece of design or doorway has its influence in the modern city architecture of America.

Then, again, we lay down restrictions in the material to be used in certain new streets: no other material than stone to be used for the elevation of business premises, for example, while some of our largest public buildings are being erected with such a material as red brick largely introduced and cutting up the façades. In new avenues that have been laid out in which it has been possible to allow of a certain direction if not an absolute vista, gable fronts are allowed which break all continuity of design and any feeling of coherence which decided horizontality in the character of the buildings would have ensured.

As an example from which much might be developed and acted upon in the treatment of many of our avenues, let us take Pall Mall, perhaps the most beautiful street in London, by reason, not of its uniformity,

but of its harmony of design and the subordinate interest of its individual buildings. Double the scale of operations and you have Oxford Street with its emporiums in place of clubs, capable of just as solid and artistic an expression of their purpose. We have some evidence already of this, with the strongly marked horizontal lines of the several new blocks lately erected and the happy abstention from the angle entrance. I would go further in my development of the theme given out in Pall Mall, and take the motive of the successions of lamps and braziers which line the areas to the clubs. These are all very evident on an evening of celebration such as the festival of the King's Birthday, and line the vista of the street in the most beautiful way. Imagine the avenues of mammoth stores with handsome standards of regular height, but in character corresponding to the building opposite which they are placed. Lombard Street, with its signs and again strongly marked horizontal features, though of very different proportions, is another example. London has many other motives that might be developed, and even the three or four generations immediately behind us are not without ideas of general forms and balance that are not strained in effect. Witness Regent Street and its continuations and the beautiful relation to the scale of life about it. Our own times have been responsible for breaking the continuity of design in many districts, and before being in a hurry to graft exotic treatment of obviously foreign design upon them it would be well for us to consider whether those were possible developments of the traditions and character in many places still so strongly in evidence. I should like to feel that there was any possibility of the designs of our new streets developing along the lines of a more comprehensive simplicity, with the tradesman's appeal confined more to the level of the public rather than displayed to the elements.

The scale of London which has taken so many centuries to evolve will always be with us, and if we can possibly give an effect of order in the many improvements of our time we shall be developing in a much freer manner than by these Continental schemes in miniature. A feeling of order, I repeat, is the most we can hope to attain to, and this, combined with interesting detail, would eventually result in a beauty which would be London's own. I am convinced that a development of possibilities as far as London is concerned, sufficient to result in a sense of order rather than symmetry, is the real keynote of our progress.

The Means to the End. By Paul Waterhouse, M.A., F.R.I.B.A.

By "artistic development" Mr. Waterhouse understood in the main the architectural development. How, if London has to be developed, shall we manage to conduct this development on true architectural lines; how shall we get the best artistic result? Cities beautiful owe their beauty to their streets and their houses. The streets may be beautiful by accident and irregularity or by deliberate street design. The houses of these streets may be beautiful individually or collectively. Our London contains—I hope always will contain—

beauty of all these four kinds: two classes of streets and two of houses. But it is clear that some artistic sense should ever be watchfully controlling these four elements of beauty.

No old street that owes its beauty to collective symmetry or to regularity of grouping should have that symmetry or regularity disturbed by the lack of some authoritative voice of control. Similarly no street whose charm is the random accumulation of irregular façades in irregular lines should have the charm of those elements violated by the intrusion of incongruous units nor even by a thoughtless introduction of undue regularity. But, conversely, there are places in which obviously the removal of chaos in favour of symmetry would be of great artistic value—places where a wise control of a group of buildings would make for greater beauty than could result from a series of contiguous individualities. And this brings us to the question of individual house design, the system under which most of our London architecture is produced. Can we truly say that throughout the important streets of central London there is at present any power at work which makes impossible the erection of buildings by incompetent designers? Is it not clear that there are many sites of great artistic importance which from time to time become occupied by buildings which would never have got carried into execution if there had been even a mild censorship exercised over the whims or the weakness of the designer?

Three self-evident axioms were: (1) That the preservation of London's past and the guidance of London's future are an artistic trust of the greatest importance. (2) At it is not merely an archaeological trust but an artistic one, the necessary guidance of the action of the trustees should be sought, not from committees or societies, but from individuals. Art is produced by individual artists, not by corporations. (3) And the third proposition is that the proper advisers are architects.

The present age in England is exceptionally strong in the numbers and quality of architects. Any architect who has had experience, as assessor in open competitions, of the wealth, the profusion of design which comes pouring in from all parts of the kingdom can testify to this. So can anyone who has looked through the really splendid and truly academic work submitted for our Institute prizes and sent in among the Testimonies required for our examinations. The best level is a really high one, and the numbers are great. There are, of course, weak men, ignorant men, and uneducated men among our ranks, but no thoughtful and observant student of modern English architecture can possibly deny that in numbers and merit the British architectural world of today is strong.

Against that wealth we have to set the indisputable fact that as far as London is concerned, great enterprises of vast importance are sometimes undertaken without any architectural advice whatever; that architectural advice when offered by the Institute in a corporate way and in a friendly spirit is often ungraciously declined; and finally that, much as individual owners may do on individual sites to secure good architectural effect in isolated instances by the engagement of first-rate architects, there is a conspicuous lack of general architectural control over these larger issues which are really of major importance. There is no good reason for this state of things, and no excuse. Construction as ruled by the Building Acts is admirably censored and



DETAIL OF REREDOS IN MORDEN COLLEGE CHAPEL.

controlled by our excellent system of district surveyors. Sanitation is also rigorously and vigorously regulated by the surveyors of the various borough councils. But the art of London building passes almost free of public control and stimulus. Why should this be?

The problem was not whether more artistic control is required, for that is a certainty; not whether architectural talent is available for such control, for that also is a certainty, nor is the question what would Mr. A, or Mr. B, or Sir XYZ, the leaders of our craft, make of the London problem if they were in charge of it, for that is a mere hypothesis. The problem was this: How are Messrs. A, B, and Sir XYZ to be brought within striking range of the work which so obviously lies waiting for them? The London problem lacks efficient artistic advice, efficient artistic control. London, which wisely and cheerfully spends many thousands a year on its regulation of good building and good sanitation, cannot possibly grudge the

comparatively trifling expense of good architectural direction. And if there were any body of artists other than architects to whom the duty could possibly pertain we should, I am sure, frankly say so. There is, there can be, no possible doubt but that what is needed is the employment by London for London of the very highest architectural advice in those problems of collective architecture which are, if people would only believe it, greater, not less, than the task of designing individual buildings for individual sites.

And now comes the crucial question. By what machinery can such a result be brought about? Would it be practicable to appoint an architect who should have supreme advisory control over all street-planning schemes and all questions of the guardianship of existing architectural monuments? Yes and no. That there should be a man who is architecturally supreme is, I believe, not a wild dream, but a practicable and very desirable solution of our difficulty. But no one man

could do all the work that needs to be done, and no committee of men can, as we have agreed before, effect work which can be styled work of art. How, then, are we to get individual artistic genius applied to the whole of this great acreage of buildings? His suggestion was that it should be made compulsory on each of the boroughs whose territory comprises the heart of London to appoint a borough architect. The functions of that architect would in no wise overlap either those of the district surveyors who have their appointed spheres under the London County Council or those of the surveyors already holding office under the boroughs. Both of these classes of men have their hands full, and do their work uncommonly well. His borough architect would have as his primary and simplest work the passing or rejection on purely æsthetic grounds of the designs of intended new buildings. His critical censorship would extend to the admissibility of altering valuable old buildings, and he would sometimes no doubt



ENTRANCE TO CHAPEL, MORDEN COLLEGE, BLACKHEATH.

have to exercise a veto against the destruction of work of historic or artistic value. With him, again, would lie the duty of advising his borough, probably in consultation with a central authority, on the formation of new streets or new frontages; it would be for him to decide whether in certain places individualistic architecture should give place to the grouping of houses in larger composition, and he would be looked to as the guardian of art in those public works which boroughs so often carry out without any architectural advice whatever. In cases where, as in the formation of squares or the approach to a bridge, collective architecture seems desirable, he would very probably be himself responsible

for the elevations, but the author would propose that he should be at full liberty to initiate a competition for such work or to advise the engagement of another architect. The borough architect, who must essentially be a man of accepted and conspicuous standing, should be paid a fixed yearly income for his services. He would not be debarred from general practice, but should be prohibited from private engagements in his district, in which he would only perform his critical and advisory functions and such works of general design as he thinks well to keep in his own hands, and for which no payment outside the yearly salary would be made. The reason for proposing that the borough architect

should not be debarred from general practice outside his borough was threefold: (1) It is of supreme importance that the men selected for these posts should be the very best that England can produce. The posts should be coveted among architects, not as berths, but as honours. If you make the holding of them conditional upon the abandonment of other outside work, you will deter the best candidates, the men who love their art for its variety of scope, the men whom no allurements of pay would entice from the free range of unfettered opportunity. (2) If the salary were made commensurate with the abandonment of the full practice of a first-rate architect, you would either

attract inferior men and mere place-hunters, or if you succeeded in bribing the best by a lure of gold, you would perhaps rob them of some of their vitality; for architecture is a sword which is kept bright and sharp in use. Moreover, you would be placing an unnecessary financial burden on the boroughs. (3) These engagements should not be permanent. It is before all things desirable that the duties of these posts should be fulfilled with extreme vitality. The initial appointment should be for three years only, renewable at the option of the borough for other successive periods of a like span. Such a system of tenure would make the acceptance of the posts impossible to architects in good practice unless they were allowed perfect freedom for the exercise of their private practice in conjunction with the borough work.

The nominations should come in the first instance from the Council of this Institute. Special conditions would no doubt apply to the nomination of the original appointments, but if once the scheme were in full working order the most natural procedure would be for each borough, when its vacancy occurs, to make application to the Council of the R.I.B.A. for the nomination of not less than two men from whom the borough would then make their own selection. The initial nominations would in like manner be made by the Royal Institute; but as there would be some seven or eight appointments to be made simultaneously a larger nomination, say of ten names, would be necessary.

That London will undergo some important changes in its street structure, and that within a few years, is perfectly certain; that these structural changes, whether effected under the Town Planning Bill or not, should be undertaken without architectural guidance would be an artistic disaster of the first quality, but it is a very probable disaster if no effective machinery is devised to meet the coming need.

The architect-in-chief would be *imprimis* the adviser of the London County Council upon the whole handling of their larger schemes. He would be officially the chairman of the monthly meeting of the borough architects; informally he would be their constant advisory colleague. There would be in the case of architects or owners objecting to the censorship of a particular design by a borough architect a right of appeal to the monthly board, and this would virtually mean that all doubtful cases would come before the architect-in-chief. Subject to a period of probation at the outset and of retirement at the close, his appointment should be both permanent and exclusive. His autocracy would be sufficiently tempered by the board of architectural colleagues.

Discussion.

Earl Beauchamp, proposing a vote of thanks to the lecturers, observed that there were exceedingly ugly buildings in London, and equally beautiful ones, both old and new. We were far too ready, he thought, to decry and depreciate the circumstances in which we lived; and he had little patience with those people who asserted that foreign countries were leading us in matters of art. We in England could produce extraordinarily fine work in almost every direction; and there was hardly any form of art in which we could not find an individual of ability among ourselves. Having alluded to the prevailing preference for old masters, which he deplored, the speaker advanced a plea for the more generous recognition of present-day artists. Passing to Mr. Waterhouse's paper, Earl Beauchamp said he thought that difficulty would be experienced in the matter of taste

or personal opinion. One could differ on politics or literature with one's dearest friend without serious trouble; but if the point happened to be whether a picture should have a blue or a green background, permanent rupture might be expected.

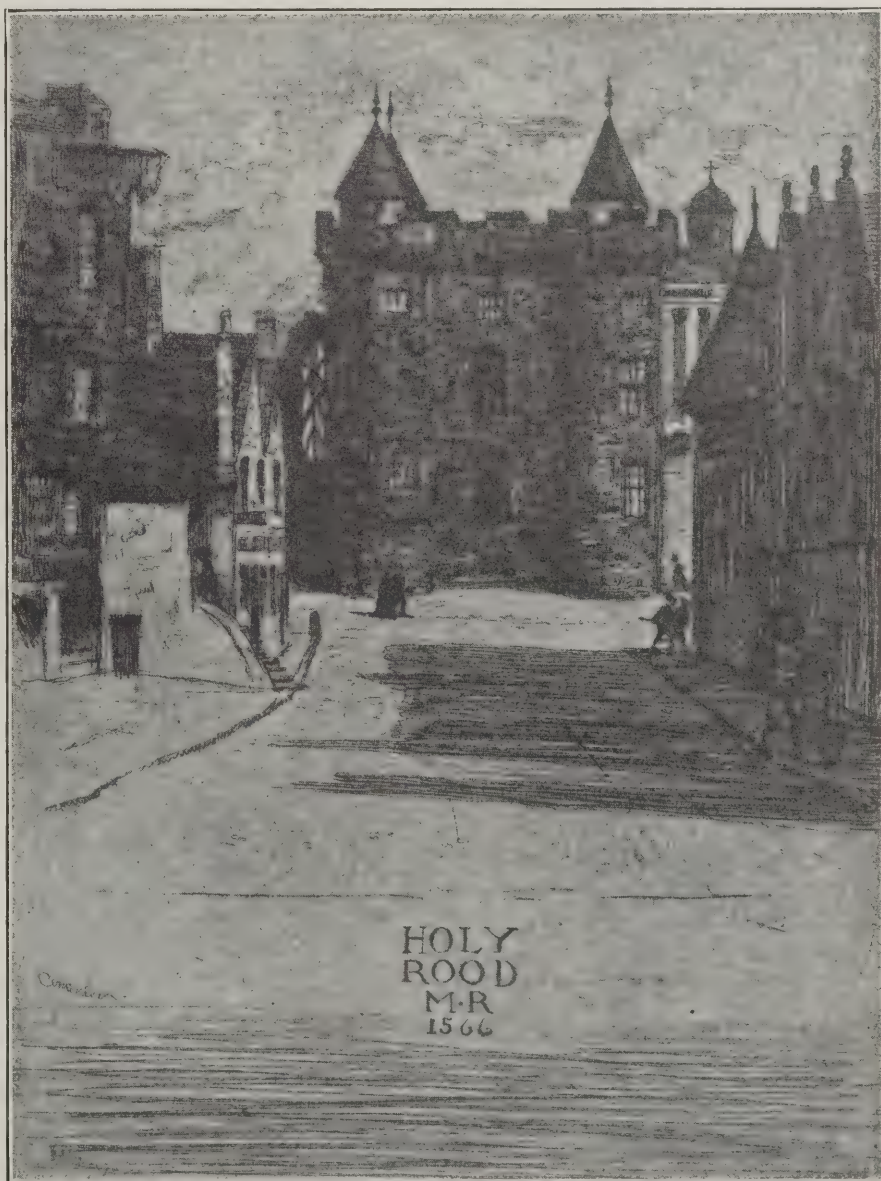
Mr. Whitaker Thompson (Chairman of the L.C.C.), seconding the vote of thanks, said that he had listened with interest to the very original proposals put forward. He knew something about sitting on committees, and he could picture the difficulty of the presiding architect who had to deal with the architectural representatives of, say, the borough of Stepney and the Royal Borough of Kensington. The idea, however, was well worth consideration. Advice on architectural matters was wanted, whether it came as Mr. Waterhouse proposed or red-hot from that Institute itself.

Sir Laurence Gomme said that London wanted an ideal of its own—not twenty-eight ideals, as Mr. Waterhouse's scheme would necessitate. The duty of architects of to-day was, he thought, to safeguard the principles on which development should be carried out. Street corners were very important, and he suggested that they should be dealt with first. He thought it would be a good idea to determine the street corners first, and to let the filling up of the areas in between come afterwards. If they visited any of the mediæval cities

such as Salisbury, or Chester, they would find beautiful buildings, although no professional architect had been employed in their erection. This, he believed, arose from the citizens' ideal to build beautifully for the city in which they lived. London was a city of lost opportunities; but architects, by continued endeavour, should be able to help towards improvement in the future.

Professor Beresford Pite said that for wealth of mediæval glory few cities could compare with London to-day. Consider only Westminster Abbey, St. Bartholomew's, Smithfield; St. Saviour's, Southwark; and the Temple. Passing to the Renaissance, there were Greenwich Hospital, Somerset House, and St. Paul's Cathedral. London was not a city of lost opportunities, but a city of gained opportunities. Passing from Renaissance London to modern London, the achievement of Westminster Palace was something that could challenge the whole modern world. Professor Pite concluded with a reference to the Mall improvement, which he hoped Sir Aston Webb would be allowed to bring to completion.

Sir Aston Webb, R.A., observed that undoubtedly the most important part of the meeting was Mr. Waterhouse's proposed architectural control. Upon his return from America he (Sir Aston) drew the attention of Lord Plymouth to the American



HOLYROOD PALACE, EDINBURGH FROM AN ETCHING BY ALBERT CHANLER.

Commission of Taste, and his lordship, upon representations from the Institute, brought the matter before the Government. There the matter had remained; but he hoped that in due course something would be carried out. As in the cases of the Sea Lord, and the Secretary for War, it would perhaps not be necessary that the gentleman holding the office of architectural adviser should be an architect. He would be a man of taste and education, and would be advised by experts.

Mr. Alexander Jamieson said that London could not be altered, and at the same time improved, from the artists' point of view. It was picturesque in itself, and an accident of growth. Any town-planning scheme under the supervision of an architect would not necessarily be beautiful.

Mr. Leonard Stokes said it should be borne in mind that the subject under discussion was a scheme for the development of London. At present the improvements that had been effected were rather isolated; but perhaps London would develop all over eventually to the same scale. At present the big developments were like patches over the city.

Mr. Rickards, replying, said his paper had been rather misunderstood. Mr. Waterhouse's paper he considered to be a gallant attempt at solving a difficult problem.

Mr. Waterhouse, in his reply, said that if he had his own way he would say, leave London alone. But it would not be left alone, and some scheme of development should be laid down.

SKETCHES OF OLD EDINBURGH.

We reproduce in this issue four sketches by Mr. Albert Chanler of portions of old Edinburgh; parts of the city which still retain traces of the character of the dirty, picturesque, mediæval city once habitually alluded to as "Auld Reekie," from the cloud of smoke which marked its position from a distance. But that was in days when large cities, in Scotland especially, were few and far between, and their smoke might well seem, to the habitual dwellers amid forest and heather, a sinister fact of life. The smoke of "Auld Reekie" was nothing to that made by modern London, but in those days people had not got used to smoke.

The backbone of old Edinburgh is the street which runs up the long ridge of the hill, under the successive names of Canon-gate, High Street, Lawnmarket, and Castle Hill, which form one direct thoroughfare, with a palace at the foot of the hill and a castle, appropriately, at the top. The ground was prepared in far-off ages of geological time by the deposit or the upheaval of the rock on which the castle stands, stretching from the scour of tidal waves the ground immediately behind, and leaving the formation familiar to geologists as the "crag-and-tail" phenomenon—the rock with a long trail of sloping ground behind it protected from the scour. Thus the blind forces of nature prepare the ground for the future strong positions of

man as a town-building and castle-building animal.

The whole grim glamour and romance of Scottish history seems symbolised in the dark turreted mass of Holyrood Palace, which stands sentinel on the level ground outside the Canongate, and forms the first of our illustrations. The Canon-gate, of which the ascent is shown in the next illustration, still retains a good many old houses. This leads up to the High Street, the most characteristic street of old Edinburgh, and through this, still ascending, we arrive at the Lawnmarket, shown in Mr. Chanler's third sketch, with the castle filling in the background.

The Mercat Cross ("Market Cross"?) is one of those bits of somewhat crude Renaissance work which, both in Edinburgh and Aberdeen, contrast so picturesquely with the ruder style of the mediæval street houses.

EXHIBITIONS.

The Leicester Gallery.

At this gallery there are two exhibitions on view. One of these is a collection of small landscapes in oil and water-colours by Mr. James Aumonier. These are rather varied in style, the artist being apparently a little uncertain in his aims. One drawing, "Across the Common," might be credited to Wimperis, for its broad water-colour style, but there is no other indication that the artist wishes to follow that school. Others, in a different style, are very good examples of composition in landscape. The other exhibition is a collection of water-colours by Mr. Hugh Norris, under the title, "In and Around a Painter's Garden." These are mostly what may be called foreground pictures of masses of flowers, showing excellent execution and a fine sense of colour; "Starworts in the big border" is especially good in this sense. The collection establishes the author as an accomplished artist in this class of subject, so much pursued at present.

Society of Painter-Etchers.

The exhibition of the Society of Painter-Etchers, now open, is always the most important exhibition of the year in black-and-white design. The present exhibition, if not quite equal to some of its predecessors, contains a great deal of good and interesting work, though we should have liked to see a larger proportion of examples of what can be done by the etched line pure and simple, without any of the processes of shading up, either with a multiplicity of lines or with tinting, which takes etching more into the field of engraving or of painting. Mr. Axel Haig's "Burgos Cathedral," for instance, is really engraving; Sir Alfred East's "Cotswold Village" might be imitated by brushwork. And line etching in the more free style proper to the art suffers from too great a multiplicity of lines, as in Mr. Hedley Fitton's "Church, St. Emilion," which is far too much scrawled over, while Mr. Goff's "St. Mark's, Venice," is so overloaded as to lose all brightness of effect. A comparison with M. Béjot's Paris scenes will show how this kind of thing can be done without losing light. The real power of etching lies in putting as much meaning as possible into a line, and leaving large spaces of white. As an example, look at Mr. Short's remarkable little work, "Winchelsea Marshes" (No. 55), where the whole perspective of the flat landscape is followed in lines of which every one tells its story. As Mr. Short is now President, it is likely that his influence will go towards



THE CANONGATE, EDINBURGH. FROM AN ETCHING BY ALBERT CHANLER.

a greater preponderance of pure etching, without any tricks of tinting.

Among the works which represent true style in etching are those of Mr. Nelson Dawson, Mr. Bentley, Mr. Martin Hardie, Sir C. Holroyd, and Mr. Charlton. There is a special collection of the works of the late Sir Seymour Hayden, an etcher who was rather uneven in his work, and has been somewhat over-rated, though he is very good at times, as in "Erith Marshes," and "The Breaking up of the Agamemnon," both of which are described as in their "first state," and are probably better in that state than after they were more worked upon.

An interesting feature connected with this exhibition is that members of the Society will give practical demonstrations in copper-plate printing on Tuesday and Thursday, during the exhibition, from 2.30 to 5 p.m.

The Goupil Gallery.

There are two exhibitions in this gallery. Mr. Horace M. Livens, whose work is exhibited in the downstairs rooms, is good in water-colour, which he treats in a rather flat style in a few tints; many of the landscape sketches are very pleasing. His manner of handling oil-colour, in representing street scenes and buildings, is what we call grim and unattractive; in his rather fine composition, "Chimneys," the sky and the chimneys seem to be formed from a thick layer of pigment violently batched into, so that the outlines of the chimneys seem to run into the sky. His real power in oil painting is in making colour pictures out of groups of domestic fowls; some of these, such as "Black Minorca and White Leghorn," are really fine in their way. Upstairs in the same gallery Mr. Ranken's water-colours of architectural and landscape subjects show much freedom and power of producing an impression by broad and bold handling; his large view of "St. Paul's Cathedral, from the South Door," is worthy of Mr. Sargent, whose bold architectural sketches it somewhat recalls.

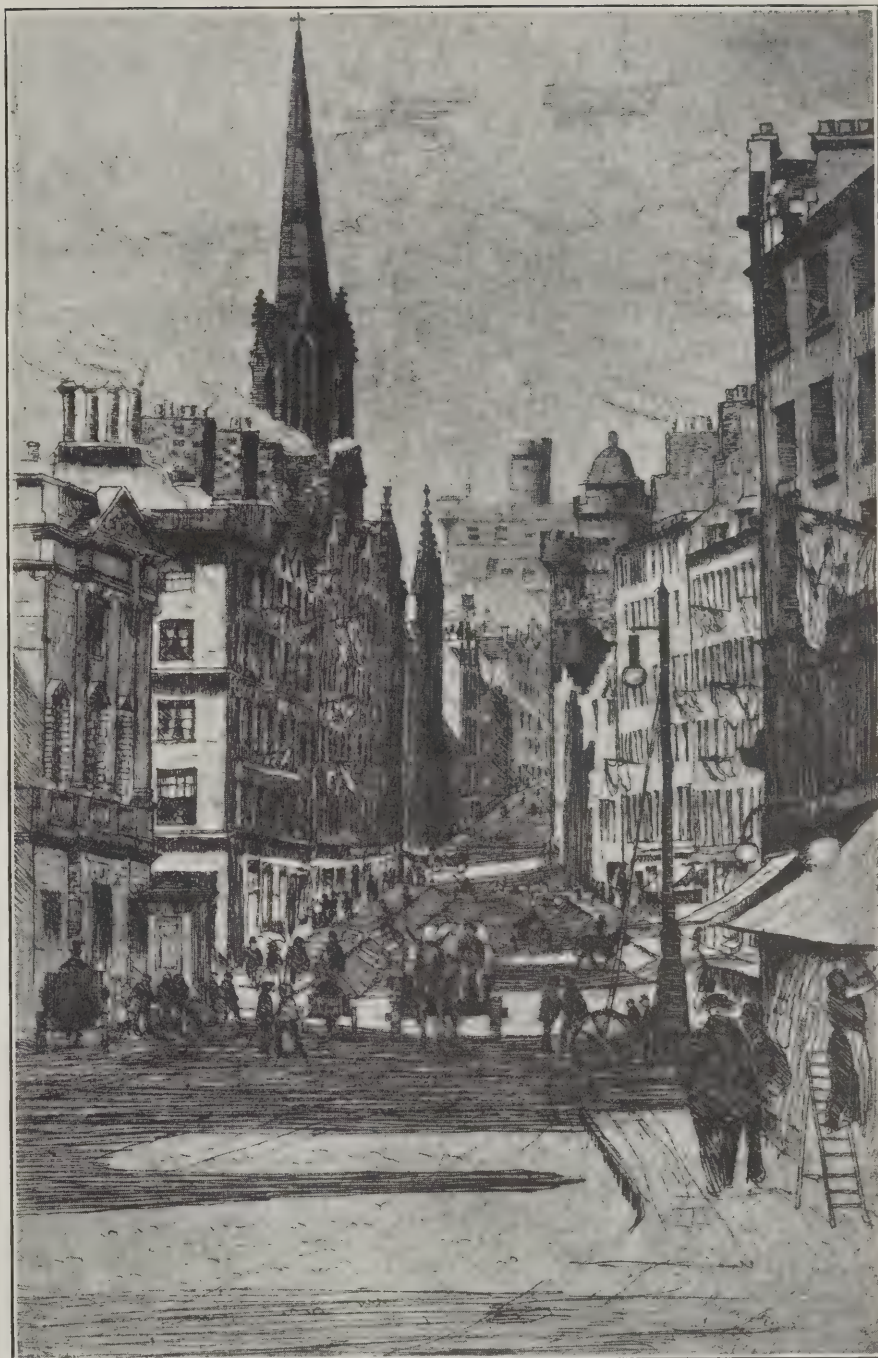
Messrs. Dowdeswell's Gallery.

The collection of water-colours by Mr. F. W. Jackson at this gallery seems rather deficient in clearness and decision of colour, but the author has a feeling for the poetry of landscape composition, and his large coast scene, "Rough Sea at Staithes," shows that power of indicating incident by broad washes of colour which is so desirable in water-colour. There are other good landscapes, but the general impression is rather dull; there seems a lack of daylight in the scenes.

The Alpine Club.

At the Alpine Club Gallery there is an exhibition of paintings and enamels by two sisters (we presume), Miss Ida and Miss Ethel Kirkpatrick. The two cases of enamels by the latter lady, chiefly pendants and other personal ornaments, show a great deal of pleasing fancy in design and colour, though we rather question the suitability of miniature landscapes in enamel for pendants, and prefer those which are purely decorative. Miss Ida Kirkpatrick's water colours show a great deal of talent in a true, broad water-colour style; some of the sea studies at Sennen, and those of commons, bright with masses of gorse, are especially good.

A contract exceeding £1,000,000 in value, for the water supply to the city of Baku, in Russia, has just been awarded to Messrs. Griffiths and Co., Ltd., contractors, of London.



THE LAWNMARKET, EDINBURGH. FROM AN ETCHING BY ALBERT CHANLER.

CHEAPER SCHOOL BUILDINGS.

The Departmental Committee appointed by the President of the Board of Education in February, 1910, to investigate the possibility of reducing the cost of school buildings has now presented its report, which was laid on the table of the House of Commons last week. It will be remembered that the appointment of the Committee was due to the anxiety felt by Mr. Runciman lest the heavy expense involved by the erection of schools in accordance with modern standards should prevent local education authorities from keeping pace with the needs of the districts under their administration in respect of school accommodation. The President of the Board of Education desired to ascertain whether any of the new methods of construction or new materials which have been introduced offer any prospect of relieving the financial strain which was placed on the authorities in the fulfilment of their

obligations to the children for whose education they are responsible; and as there did not appear to be any immediate likelihood of practical tests being made to determine the suitability of novel methods, or materials for the purposes of school buildings, he decided to employ the resources of the Board of Education in order to obtain such information as was obtainable for the guidance of local education authorities. The terms of reference to the Committee were that it should inquire and report: (a) Whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present; and if so (b) what steps should be taken to facilitate the adoption of such materials or methods, and whether any alteration in the law is required for the purpose. It is hoped that the report of the Departmental Committee will be issued to the public in the course of a few days.

IN PARLIAMENT.

[BY OUR GALLERY REPRESENTATIVE.]

Suggested Cleaning of Buckingham Palace.

Mr. Ingleby having asked whether, in view of the Coronation, it was proposed to improve the appearance of the front of Buckingham Palace by cleaning or otherwise, Mr. Dudley Ward, on behalf of the First Commissioner of Works, replied in the negative. He said it was unlikely that cleaning would effect the improvement suggested by the honourable member.

Ventilation Troubles in the House.

Mr. Dudley Ward, having received a complaint about the grill ventilators in the tea room and news room of the House of Commons being fruitful sources of colds and chills among members, has stated that the ventilation of these rooms is a matter not unattended with difficulty, but that during the Easter Recess a fresh-air inlet to discharge overhead will be substituted experimentally for one of the existing ventilators in the news room, and that if this proves successful similar alterations will be made generally.

New Post Office at Bolton.

Mr. Dudley Ward, in reply to Mr. Gill, stated, February 16th, that the contract for the erection of the new Post Office at

Bolton had not yet been let. The date of doing so depended upon the date of Parliamentary sanction being given for the expenditure to be incurred on the service. The beginning of building operations could be made about three weeks after a tender was accepted.

Hoarding in St. James's Park.

Mr. Dudley Ward informed Sir Henry Craik that the hoarding now erected in St. James's Park at Storey's Gate is temporary only. On the completion of building operations there will be a slight alteration of the former boundary, resulting in an addition to the area of the Park.

Rosyth Docks.

Mr. McKenna, replying to Mr. Goldman, stated that the granite as well as all other materials for the Rosyth works was inspected by the Admiralty staff employed on the works. Special inspectors were not employed for granite only. The necessary qualifications of the staff had been acquired by practical experience on other similar work.

Mr. Fell asked if the plans for the works at Rosyth had been amended.

Mr. McKenna replied that one graving dock was included in the original contract, but, as already stated, provision would be made in the Estimates for the ensuing year for a second dock. No amendment in the

Rosyth general design was necessary, as the inclusion of more than one dock was always held in contemplation.

Rates of Pay at Redford Barracks.

Mr. Haldane, replying to Mr. John Ward, stated that a complaint was received that in some cases labourers employed under the contract for the foundations of the new barracks at Redford, a few miles from Edinburgh, were not receiving the rate claimed for such work in Edinburgh. The matter was not free from difficulty, but to prevent the recurrence of any doubt the payment of the recognised Edinburgh rates had been stipulated for in the contract just made for the construction of the buildings.

Housing and Town Planning:

The Court of Appeal.

In the House of Commons, February 16th, Mr. Newdegate asked the Prime Minister whether representations had been made to the Government that the Local Government Board were not a suitable court of appeal from the decision of local authorities under the Housing and Town Planning Act, 1909; and, if so, whether he would cause a Bill to be introduced to amend the Act by substituting a judicial tribunal for the Local Government Board as the appeal court.

Mr. John Burns, who replied, said: Representations to the above effect have been received by the Local Government Board from 15 local authorities in all, out of over 1,800 in England and Wales, and also from Messrs. Rubinstein, Nash and Co., solicitors. Since the Act came into operation there have been 52 appeals to the Board, and in all 11 inquiries have been necessary. It is significant that none of the local authorities making the representations have had any experience of the Board's inquiries into appeals under the Act. I may mention that of the appeals to the Board 26 were withdrawn or for some other reason did not proceed. In seven cases the appeal was allowed. In eight other cases the appeal was dismissed. The question of making the Local Government Board the court of appeal in these cases was very fully discussed on many occasions when the Bill for the Act of 1909 was before Parliament, and there does not seem to be any good reason for altering the Act as suggested. The latest figures available—those to 31st March, 1910—show a material increase in the activity of local authorities in regard to closing orders, and no doubt later figures will show that this very salutary increase has been maintained.

Proposed Amendment of the Act.

Mr. John Burns, on another occasion last week, in the House of Commons, stated that he had not lost sight of the suggestion that the legislation dealing with Housing and Town Planning should be consolidated in one Act, so that it might be made more intelligible to members of district councils and other local authorities. He thought, however, that consolidation should be accompanied by amendment, and it would be wise to await some further experience of the working of the Act before proceeding to amendment.



MERCAT CROSS, EDINBURGH. FROM AN ETCHING BY ALBERT CHANLER.

The New Temperance Memorial Hall, Newcastle-on-Tyne, is being ventilated by means of Shorland's patent exhaust roof ventilators and inlet ventilating panels, supplied by Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

OBITUARY.

Colonel Eustace Balfour.

The late Col. Eustace Balfour, who died on Tuesday last week, took a keen interest in architecture whilst he was an undergraduate, and on leaving Trinity College, Cambridge, became a student in the office of Mr. Basil Champneys. In 1870 he began to practise on his own account, and in 1885 he entered into partnership with Mr. Thackeray Turner, with whom he continued in harmony until the end. In 1890 he was appointed surveyor to the Grosvenor estates by the late Duke of Westminster. He was one of the few men, says the "Times," who instinctively realised the potentialities of an old house lacking architectural merits, and few were better able to evolve a decorous and dignified interior out of a commonplace room. His plaster-work was admirable, full of vigour and substance, and he was a warm partisan of robust cornices with bold and freely modelled detail. This love of well-placed decoration can be detected wherever Col. Balfour was responsible ab initio, though in the well-known house erected in Park Lane for Mr. Beit it would appear that the architect was over-scrupulous, being reluctant to adorn the exterior with the deep-cut enrichments so brilliantly applied by Vulliamy to Dorchester House, close by. St. Anselm's Church, Davies Street, W., is perhaps the most complete and instructive example of his work, while the latest, and not the least characteristic, of his architectural achievements was the rebuilding, in co-operation with Mr. Thackeray Turner, of the historic Scottish Church of Crown Court, Covent Garden. Col. Balfour did a good deal of work at Whittingehame, the home of his family; and Ampton Hall, near Bury St. Edmunds; Charlwood, Mr. Alfred Hoare's house at East Grinstead; and the chapel at Hatfield Hyde should also be mentioned.

Mr. Charles Baker.

The death is announced of Mr. Charles Baker, architect, of Leicester, aged 77. Deceased was the representative of probably the oldest firm of architects in Leicester. He was articled to the late Mr. Wm. Flint, who originally initiated the practice. It then became Messrs. Flint and Shenton, and later Mr. Baker went into partnership and the business was known as Shenton and Baker. It continued so until about five years ago, when the practice was merged into that of Messrs. Tate and Herbert, architects and surveyors, of Friar Lane. Mr. Baker was responsible for many well-known buildings in Leicester and the county, among which may be included the Wyggeston Boys' School.

Mr. Edmund Grove.

By the death of Mr. Edmund Grove on February 11th, at Brighton, the Institution of Civil Engineers loses its oldest associate member. Born in 1824, Mr. Grove received his earlier education at the hands of Dr. Pritchard, who in his day sent so many men into the world to earn distinction and bring credit to his teaching, and on leaving Clapham Mr. Grove was trained as a civil engineer. In due course he joined Mr. Wild's staff in Great George Street, and for him did a great deal of railway work, especially in the Eastern Counties. When the railway mania came to an end, Mr. Grove joined the Messrs. Cochrane in founding the Cleveland firm of Cochrane, Grove and Co. A man of cultured mind,

liberal views, and sound judgment, Mr. Grove was also a keen musical critic, and took great interest in the Royal College of Music, with which the name of his brother, Sir George Grove, will always be linked.

The Late Mr. C. Hodgson Fowler.

The late Mr. C. Hodgson Fowler, diocesan architect, Durham, left estate which has been proved at £14,998 gross.

Mr. P. D. Scott-Moncrieff.

Mr. P. D. Scott-Moncrieff, assistant in the Department of Egyptian and Assyrian Antiquities in the British Museum, had made a series of copies of Egyptian stelæ, etc., in that institution, and was the author of several papers in the publications of the Society of Biblical Archaeology.

Mr. John Athron.

The death is announced of Mr. John Athron, a well-known Doncaster architect, at the age of 40. Deceased took a prominent part in the work of the Doncaster Art Club, of which he was for some years the secretary.

THE ARCHITECT, THE BUILDER, & THE SPECIALIST.

At the annual dinner of the Manchester, Salford, and District Building Trades Employers' Association, Mr. George Macfarlane, in proposing the toast of "The Manchester Society of Architects," said that the architect must be a man of many parts. Not only must he be a skilled artist in his own special work, but he must also have a fair knowledge of law, physics, hygiene, and sundry other acquirements that constitute the "all-round man." In the good old times, when the art of building attained its highest point of excellence, the architect was the master builder, and the name of contractor was unknown; but division of labour is the tendency of present times, and the profession of the architect and the craft of the builder, although still linked together, have their own special spheres, separate and distinct. Their individual interests, instead of being, as they ought to be, identical, are sometimes in conflict. The ideal condition should be unity of aim and purpose; but present-day competition, and the struggle to get work, keep widening the gap, and harmony and co-operation are giving place to hard and strict commercialism. The endeavour to get satisfactory results from the lowest bidder is an endeavour to attain the impossible—to get good things cheap. The only work that can give lasting satisfaction to either architect or owner cannot be had except at a fair remunerative value. It must be a source of worry and anxiety to a conscientious architect to know that the contractor who is doing his work must either "jerry" it or lose by it. Architects have quite enough to carry, without that added trouble. Yet, so long as the cheapest man wins, and crowded competition is the order of the day, architects will have this anxiety added to their other trials.

Scarcity of work and stress of competition are a temptation for builders to "cut low" and risk the chance of making a bit by some unforeseen lucky circumstance. But to make such expectations the only means of getting any remuneration is to build upon an unsound foundation, which will sooner or later bring disaster.

Modern conditions are telling against architectural progress. The purse-strings are continually in evidence as regards both the architect and builder, and woe betide

either of them should the amount of the contract be exceeded, or some mistake be made, or something forgotten. Everything must be foreseen and anticipated to the minutest detail. But was there ever a job carried through absolutely free from mistakes? He questioned it. They will creep in, in spite of the utmost care.

Some critics say that the art of architecture has long passed its zenith. Ruskin said that during the 13th century architecture reached the top of the hill and it has been going down on the other side ever since. Certainly the stonework of our old English abbeys and cathedrals, all built between the 12th and 14th centuries, illustrates building in its grandest scale, unrivalled for beauty and magnificence. That was, in a manner of speaking, the "Stone Age." Now we are in the "Iron Age." The mason and the bricklayer are being ousted by the riveter. As was said the other day about iron construction in buildings, "This sort of thing is not architecture; it is not building; it's boiler-making." But, after all, when it comes to erecting an artistic building, whether it be a cottage or a castle, you have to fall back on the old methods. There never was such a time as this for choice of materials to build with. It is becoming next to impossible to remember the various names of the new materials—substitutes for stone, for bricks, for timber; substitutes for everything and everybody. In fact, the building trade is in a state of flux or transition. New types are replacing the old. Either for better or worse the old order of things is passing and giving place to new. This is the day of the specialist. He is fast becoming master of the situation. Even the architect has to stand aside and bow to him. The ordinary tradesman has to speak to him with "bated breath and whispering humbleness."

Yet, in spite of all our mutual troubles, both the architect and the builder manage to pull along, and upon the whole we pull along wonderfully well together, and without very much friction. Neither of us will ever be without our grievances. The nature of our employment is such that we are continually coming up against conditions that demand a spirit of forbearance, a disposition to adjust matters of difference by mutual concessions, and by assisting one another out of difficulties. I have had more than fifty years' experience with architects, and the men I have known during that time have, with very few exceptions, been gentlemen of honour and worthy of trust.

THE TOMBS OF EGYPT.

At the Royal College of Surgeons, last week, Professor G. Elliott Smith, of Manchester University, delivered the first of a series of three Arris and Gale lectures on "The History of Mummifications." The prehistoric Egyptians, he conjectured, acquired the conviction that the preservation of the body was the condition necessary for the attainment of immortality. This naturally led them to lavish still more care on the housing of their dead, as was shown by the rapid evolution of their tomb-architecture and equipment. This was rendered possible in the middle of the known pre-dynastic period by the discovery of copper; and the vastly enhanced scope that metal tools gave to the carpenter and stonemason by the end of the pre-dynastic period was at once demonstrated in the aggrandisement of the tomb and the invention of coffins of wood or stone.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editors desire to give notice that answers to the following enquiries can no longer be undertaken:—

- (1) Enquiries about buildings to measure in particular towns and districts.
- (2) Enquiries embodying questions which have been set in examination papers.
- (3) Enquiries which ask for or require the preparation of special designs as part of the answer.

System of Filing.

W. J. and W. (TORQUAY) write: "Can any of your readers give suggestions for an economical and ready system of filing drawings ($\frac{1}{8}$ in. scale, $\frac{1}{2}$ in. scale, and full size details), preferably flat in drawers, the drawings being in all sizes?"

—[We shall be obliged if readers will correspond with regard to this enquiry.]

A Light and Air Question.

"DOUBTFUL" writes: "The enclosed plan shows the position of an existing warehouse, whose external walls, following the line a, b, c, d, f, g, rise to a height of 47 feet above ground level. The owner, A, of this building wishes to increase his accommodation by covering the plot of land B with buildings as shown by hatched lines, the intention being to carry the new buildings to the same height as the old, as indicated on sections.

"The adjoining owners of buildings C, D and E, have windows at w, x, y and z, which have existed for over 20 years. Could either of these owners legally object to the proposed buildings on the ground of interference with light and air? If so, to what extent must the proposed building be curtailed in order to avoid interfering with the adjoining owners' ancient lights?"

—There is no doubt whatever (under the circumstances you detail) that the two windows at w, the two windows at x, and those

at y and z, constitute ancient lights, and must be regarded as coming within the provisions of the Prescription Act accordingly.

The new building would to some extent diminish the light received by them all, but I do not suppose that owner E (windows y and z) would be seriously affected. Owners C and D (four windows marked w and x) would certainly suffer a good deal, and I should strongly recommend A to approach them both before commencing the proposed works.

Legally the position is that although it may be an undoubted fact that all the adjacent owners will lose light to some extent, they possess no legal remedy unless the diminution is so serious as to constitute a real (and not merely sentimental) loss to them, and partially unfit their properties for the purposes for which they are now employed. There are many decided cases to this purport. In deciding this question it is necessary to take into consideration the character of the district (e.g., residential, manufacturing, etc.) and any special circumstances there may be—for instance, an owner cannot expect so much light in the City of London as he would have a right to demand in a "garden city."

F.S.I.

Construction of Studio.

B. P. (LONDON) writes: "(1) A studio, about 20 ft. by 14 ft. is to be built entirely of glass on a stone plinth 3 ft. high. Do you consider it would be practicable so to construct it that it may easily be taken to pieces in order to erect it on another site if desired; or would the bother entailed, including risk of smashing glass, etc., on transit, make it hardly worth while?"

"(2) What sort of jointing, etc., would you recommend if a framework as above were made to be taken to pieces?"

"(3) Can you give me the address of a firm that import collapsible wooden houses from Norway or Sweden?"

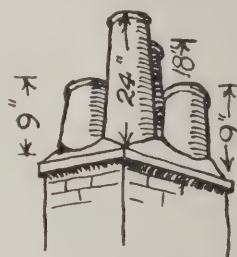
—(1) and (2). It is of course practicable to construct such a building, though if it is to be frequently removed the stone plinth seems rather a curious provision. The least risk of breakage would probably be incurred if the sides and top consisted of complete framed and glass sashes which could be dropped into position between rebated uprights, tenoned to heads and sills so that all could be taken apart in sections.

I know of no firm importing Scandinavian collapsible houses, but Mr. S. Lee, of 7, St. Helen's Place, London, E.C., had such a house on exhibition at the first Letchworth Cottage Exhibition, and may supply them.

G.

Down-draught

E. E. L. (BIRMINGHAM) writes: "Kindly advise me as to the best method for stopping the back-draught down the flues of a chimney stack. Two houses adjoin each other, and the flues form one stack at front and another at the back—four flues

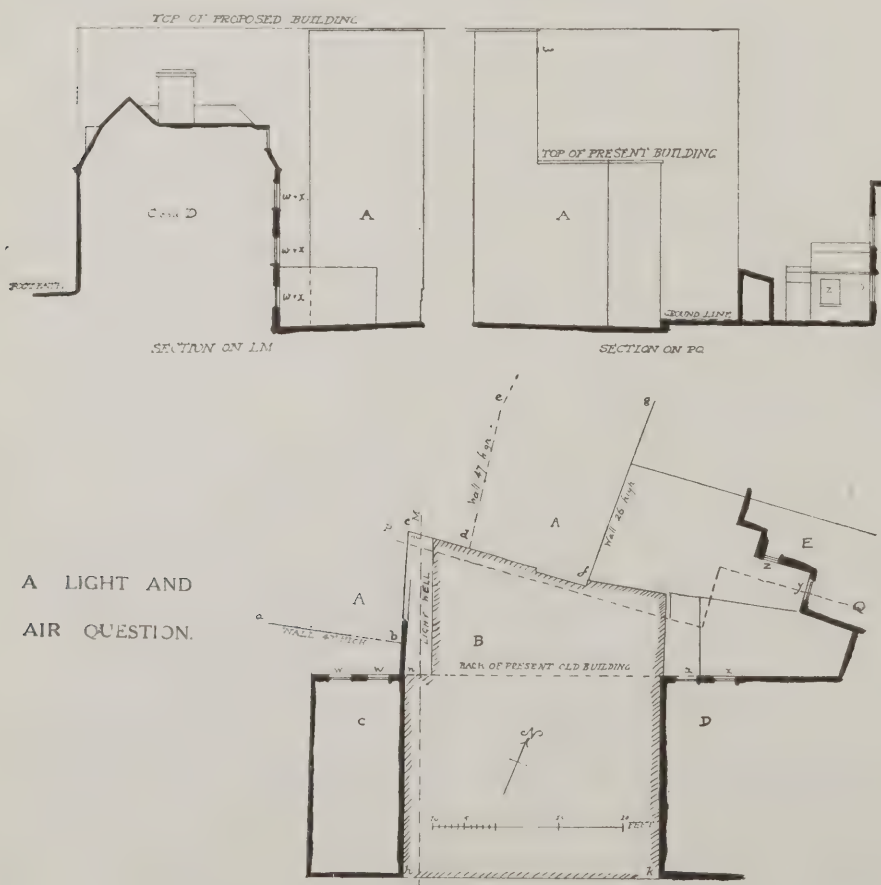


each. The tenants complain that when they light a fire in one room the other rooms get full of smoke. The stacks run about 2 ft. 6 in. above the roof, and are topped with small plain pots."

—If it is certain that the cause of the trouble is down-draught and not defective withes it may be lessened by raising each alternate flue in the four-flue stacks with taller pots, as sketch. There is a pot on the market known as the "spigot louvre," which permits this to be done without the expense and trouble of unsetting existing pots, as it fits into any ordinary pot like a socket. This is an inexpensive terra-cotta pot, and is independently efficacious in preventing down-draught.

NEW TRAMWAY SCHEMES.

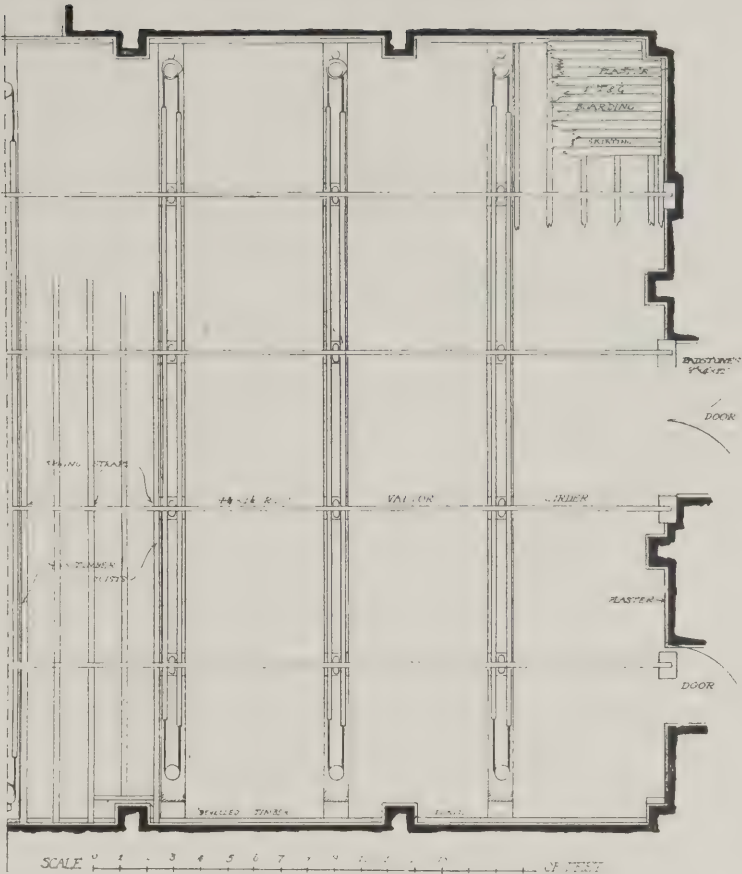
The outstanding feature, so far as tramway legislation is concerned, in the present session of Parliament will be the powers sought by different local authorities and companies with regard to what is known as the railless electric traction system. This system is in operation at several places on the Continent, but nowhere in this country, although last session it was authorised in the case of Leeds and Bradford. Two Bills affect Brighton and District, although one contemplates the construction of the ordinary track tramways. Seven new companies are proposed to be incorporated for railless traction, and the districts affected are Western Valleys (Monmouthshire). Rotherham, Oldham, Croydon, Macclesfield, Malvern, and Matlock. Five local authorities, viz.: Aberdeen, Chiswick, Newcastle-on-Tyne, Northampton, and Rotherham, are also asking for powers. Powers for further tramway construction are also being sought by the following local authorities:—Belfast, £39,000; Hull, £41,000; Manchester, £7,850; Newcastle-on-Tyne, £74,451; Rotherham, £19,943; Northampton, £139,403 (including street works); Paignton, £9,150; Southampton, £28,170; and the London County Council, £973,960 (including street widenings).



SPRING DANCING FLOORS.

The accompanying illustrations show the patent "Valtor" spring floor which Messrs. Francis Morton, junior, and Co., of 110, Cannon Street, London, E.C., have devised after much investigation and study. The floor is particularly resilient, and the makers claim that this quality is secured without any weakness due to over-lightness of parts or the introduction of rubber pads, cork, felt, or other perishable material. The design is based on the assumption of the floor being possibly used for ordinary purposes at any time—as for public meetings, concerts, etc.—where a load of $1\frac{1}{4}$ to $1\frac{1}{2}$ cwt. per sq. ft. may be imposed; in which event the springs, if closed coil to coil by the dead load, will regain their original height, without set or distortion, upon the removal of the load.

The drawing reproduced on the next page shows the simplest form of the installation. There are one, two, three or more lines of "Valtor" steel girders, according to the width of the floor, each line being divided into short lengths linked together by patent spring fitments. The latter consist simply of a cast-iron casing enclosing a steel helical spring which is held in position on a ferruled base secured to the support below (wall, pier, girder or stanchion, as the case may be), the casings being connected in pairs by being bolted through the webs of the girders. The extreme ends of each line of girders is pivoted on a cast-iron rocker, and in this way, it will be noticed, the whole floor is kept absolutely free from any fixed attachment to the walls. In cases where the depth from the finished floor level to the foundations or supports is limited, the timber floor joists rest upon timber plates bolted to the webs of the "Valtor" girders, and in the firm's smallest-size installation the joists rest on the lower flanges themselves, being tied underneath with steel straps. With this small-size installation the whole floor can

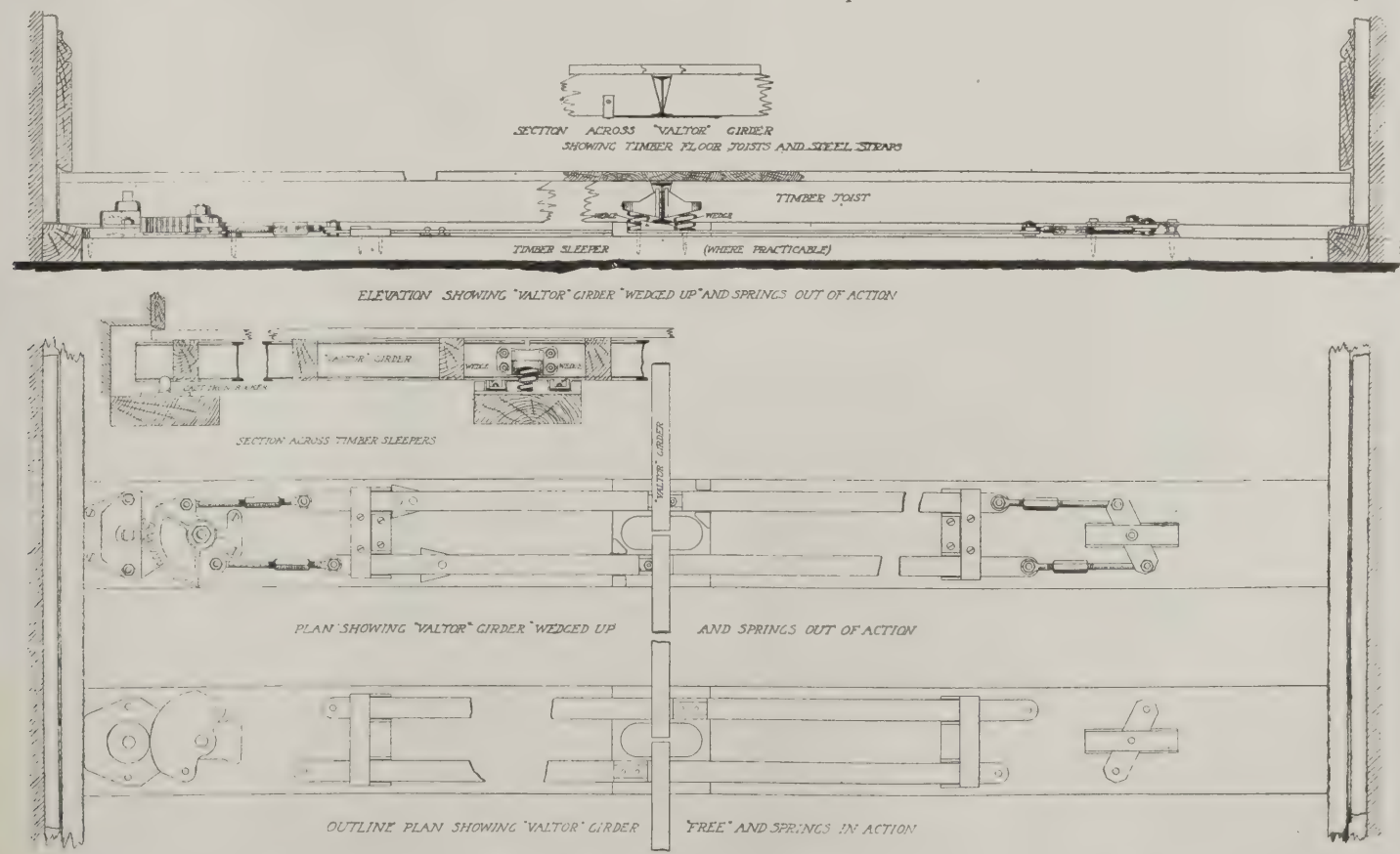


HALF-PLAN OF SPRING FLOOR AT EASTBOURNE.

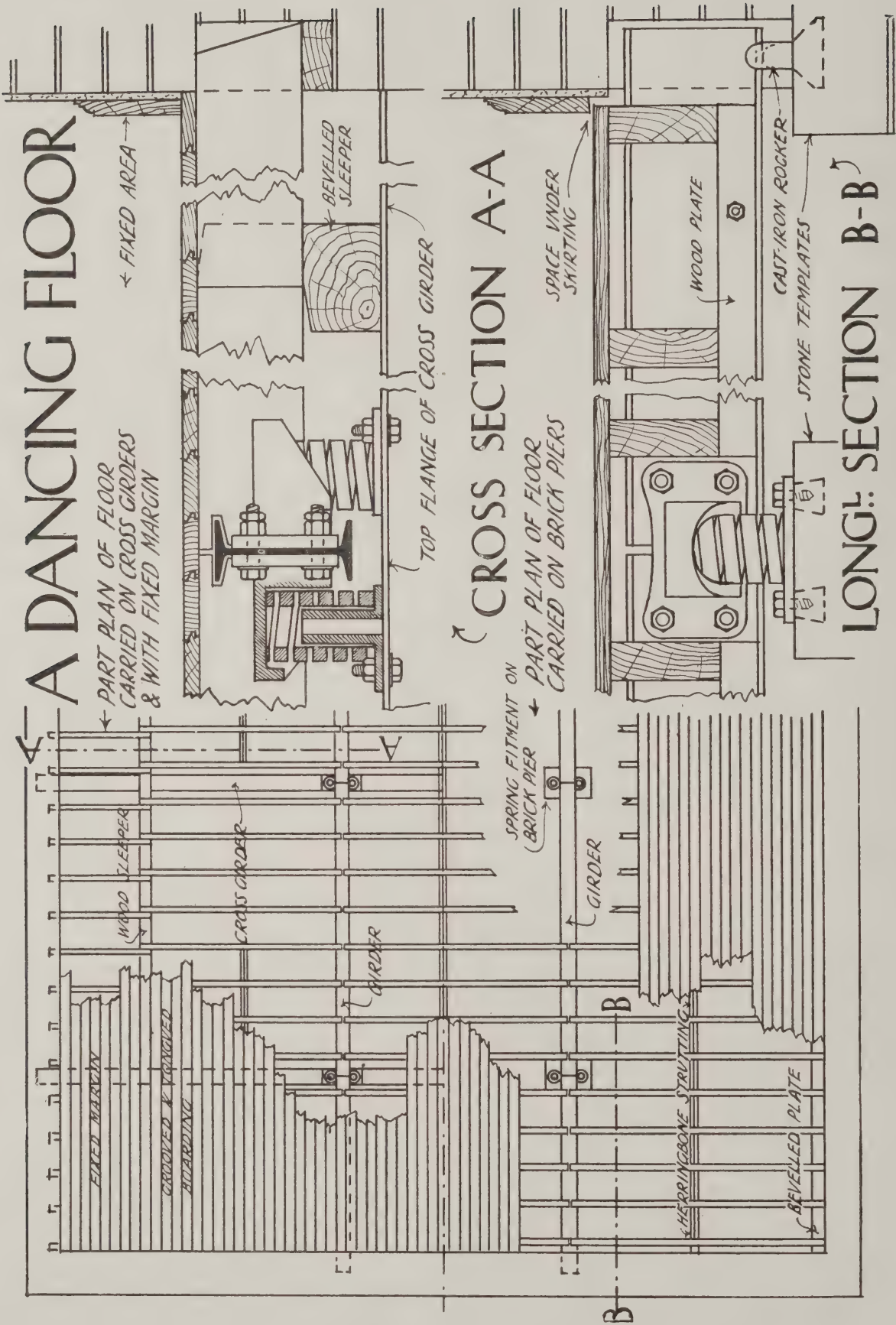
be got into a depth of $6\frac{1}{2}$ ins. from the top of the floor to the underside of the ferruled bases upon which the fitments stand; this, in fact, is the actual depth in the case of the new ball-room floor at the Savoy Hotel, installed by Messrs. Morton, jun., and Co.

The foregoing description applies to the "Valtor" system as ordinarily applied, but circumstances sometimes require an

adaptation of it to be adopted, as where the depth above the girder is limited to, say, 3 or 4 ins. In this case the springs are carried upon brackets bolted to the cross-girders, the "Valtor" girders themselves being connected across the top flanges of same with special steel spring straps so as to prevent any sudden shear in the floor boards. This is the system



PLANS AND SECTIONS SHOWING WEDGING GEAR FOR PATENT SPRING FLOOR.



This is a Patented Type of Floor, particulars of which are given on the preceding page.

adopted at the Waldorf Hotel, London, at the Londonderry Guildhall, and for one of the floors of a dancing academy in Chelsea: though the expense is heavier than for the ordinary system.

Another fitting which the firm have recently introduced enables the floor to be converted from a resilient to a rigid condition by means of a wedging arrangement. In cases where there is sufficient depth underneath the floor, this result is secured by driving wedges or blocks between the underside of the "Valtor" girders and the tops of the piers upon which the fitments stand, while in other cases where access beneath the floor is not possible, the same system of wedging has been carried out from above, by leaving either small traps in the floor over the fitments, or by having short lengths of the floor boards screwed down so as to be easily removable. Exception, however, is sometimes taken to this method, as it involves breaking up the continuity of the floor boards. To meet all requirements, therefore, Messrs. Morton, jun., and Co. have devised the wedging gear shown by the drawings reproduced on page 207 (one of which is the half-plan of a floor at Eastbourne). The gear consists of steel wedges on steel straps passing underneath and across the lines of "Valtor" girders, the straps being connected at one end either around a pulley or by a cross-head, and being attached at the other end to a toothed quadrant worked from a pinion wheel by a key inserted from above: by which means the wedges can be withdrawn or put in place under the girders as desired, thus making the floor either resilient or rigid. At the Savoy Hotel there are about twelve sets of such gear, actuating 120 spring fitments, and the whole change can be effected by a couple of men in a few minutes. The device is clearly a most useful one, as it enables floors which may only occasionally be required for dancing (such as billiard-room floors or gymnasia) to be altered to suit each requirement.

With regard to the laying of the timber-work of the floor, there are numerous ways of doing this according to the particular situation of the room. If the depth allows, the simplest form is that in which the timber joists are laid loosely across the tops of the "Valtor" girders in short lengths spanning one bay, being held upright in position by a line of herring-bone strutting down the centre of each bay (the strutting being omitted over the spaces where the "Valtor" fitments occur). Along each of the side walls the joists rest loosely upon bevelled timber plates, as shown. The floor boards should be of oak or maple (the former for preference) laid in straight lengths, tongued, grooved and secret-nailed. Where the resilient floor reaches to the walls all round, the skirting must be kept free from the floor so as to prevent any risk of the resilient portion causing vibration to the plasterwork of the wall.

Where size permits, Messrs. Morton, jun., and Co. recommend that there should be a fixed border along the sides, and also occasionally at the ends of the room, as with this arrangement there cannot be any sudden drop between the fixed portion and the resilient portion, as the latter hinges along the line under which the supporting sleepers are placed; nor can there be any difference in level where the two areas meet, and, consequently, no edge over which people might trip. Another point worth mention is that each spring fitment is a unit in itself and affects the area immediately over it; hence the floor

does not depend upon the whole of its surface being occupied in order to possess resiliency, and the system is therefore as effective in a small room with perhaps half-a-dozen fitments as in one 100 ft. square.

NEWS ITEMS.

Municipal Architecture.

The Torquay Town Council have agreed to pay their borough surveyor, Mr. H. A. Garrett, the sum of 500 guineas for his extra services as architect for the Pavilion, the Council bearing the cost of additional assistance and expenses incurred in connection with the work.

* * *

The Statue of the late Duke of Devonshire.

This statue, unveiled last week in London, is in Horse Guards Avenue—to the south of the new War Office. It is of bronze on a pedestal of Darley Dale stone. Mr. Herbert Hampton was the sculptor, and Messrs. Kirkpatrick Bros., of Manchester, were the contractors who executed the work.

* * *

H.M. Office of Works and Public Statues.

The Mayor of Westminster (Mr. E. L. Somers Cocks) announced at last Thursday's meeting of the Council that the Office of Works had taken over the charge of the statue of the Duke of Devonshire; and it was also understood that the Office of Works would in the future undertake all such duties.

* * *

A South London Subway.

The Elephant and Castle Subway Committee recommend the Southwark Borough Council to proceed with the construction of a new "arm" to the Elephant Subway, from the corner of Newington Causeway and New Kent Road to the corner of Walworth Road and New Kent Road, at the approximate cost of £1,700.

* * *

Rochester Bridge to be Rebuilt.

The tender of Messrs. John Cochrane and Co., engineers, London, for the rebuilding of Rochester Bridge has been accepted. The amount of the contract is about £70,000, and the work, which will be commenced almost immediately, will take from two to two-and-a-half years to complete. The bridge will be a steel structure.

* * *

Laying the Last Brick at Jarrow Baths.

An inspection was made last week by members and officials of Jarrow Town Council, of the new public baths in Walter Street, when the ceremony of laying the last brick was performed by the chairman of the baths committee, who was presented with a silver trowel by the builder, Mr. Stephen Sheriff. The architect (Mr. Morton, of South Shields) and the builder were honoured with toasts.

* * *

St. Philip's Birmingham.

The fine tower of St. Philip's, Birmingham, of which Professor Reginald Blomfield, in his "History of Renaissance Architecture in England," wrote that it "is helped by its commanding position, but is certainly a powerful and original design, and unlike anything of its kind in England," has been for some time badly in need of repair and the first practical steps have just been taken to ascertain its exact condition; scaffolding is being erected, by means of which a

thorough examination can be made. The church was designed in 1710 by Thomas Archer.

* * *

Law Courts Extension.

Such progress has been made with the new buildings extending the Law Courts on the west side that the completion of the structure may be expected within the contract time—July, 1912. The work was begun in November, 1908, and the top storey has now been reached. Parliament voted £100,000 for the work. The building provides for four new courts, each 45 ft. by 36 ft.

* * *

A New London Fire Station.

The London County Council propose to erect a new fire station for the St. John's Wood district in place of the existing station in Adelaide Road, Finchley Road, where the accommodation is very inadequate. The site proposed is at the junction of Eton Avenue and Lancaster Road, the estimated cost of which is £3,250. The cost of the building will probably be £12,000.

* * *

The Royal Exchange Panels.

Two new panels have been accepted by the Gresham Committee for the ambulatory of the Royal Exchange. One is the gift of Mr. W. W. Aston, and depicts "William II. building the Tower of London," the artist being Mr. C. Goldsborough Anderson. The other panel, which portrays "Henry VI., the Battle of Barnet: the Trained Bands marching to the support of Edward IV.," is presented by Mr. Arthur Franklin and his brothers, and the painter is Mr. J. H. Amschewitz.

* * *

Road Board Grant.

The Road Board have, with the approval of the Treasury, made from the Road Improvement Fund a large number of advances to county councils and other highway authorities. Lancashire gets about £35,000 (£82,150), Kent £20,000 (£64,900), Notts £10,000 (£14,900), Lincolnshire £10,150 (£45,000), Bucks £5,000 (£10,000), Carnarvonshire £3,000 (£3,500), Bedfordshire £390, and Berkshire a grant of 10 per cent. on the annual loan charges on £60,000. The figures in parentheses refer to the respective costs, and are only roughly approximate.

* * *

Why should Factories be Ugly?

The Brewster Building now being completed on the Queensboro' Bridge Plaza, Long Island City, resembles in exterior treatment a high-class office building rather than a factory. It has a reinforced concrete skeleton frame, no part of which is exposed except on the rear, the three other sides, facing on the Plaza and two streets, having a red brick facing trimmed with artificial stone and ornamental iron fascias. The building contains seven storeys and basement, measures 200, 352, and 170 ft. on the street and Plaza frontages, covers an area of about 55,000 sq. ft., and represents an investment for the structure alone, exclusive of the land and equipment, of over 600,000 dols. The roof is 96 ft. above street level and is surmounted by a clock tower, 25 ft. square and 84 ft. high, the top of which, consequently, is 180 ft. above the street. The building was designed by Stephenson and Wheeler, New York, and built by Messrs. Tucker and Vinton, New York, using reinforcement supplied by the Trussed Concrete Steel Company, Detroit.

THEATRE LIGHTING.

THE ELECTRICAL INSTALLATION AT THE
PALLADIUM.

Some idea of the electrical equipment in a modern theatre may be gained by the public from the auditorium, but an inspection "behind the scenes" alone can reveal the extent and complexity of the installation. We have recently had the opportunity of examining, in detail, one of the latest London theatres—the "Palladium," some account of the electrical equipment of which may here be given as likely to be of interest to readers.

The building is situated in Argyll Street (off the top of Regent Street), and was formerly known as "Hengler's Circus." Under the direction of Messrs. Frank Matcham and Co., the well-known firm of theatre architects, the interior has been completely remodelled and redecorated, and an elaborate electrical installation has been provided by Messrs. Siemens Brothers and Co., Ltd., and Messrs. Siemens Brothers Dynamo Works, Ltd.; the wiring contract having been sub-let to Messrs. Rashleigh, Phipps, and Co., Ltd.

In accordance with the regulations of the London County Council, current is supplied from two separate companies—the St. James's and Pall Mall Electric Light Co., Ltd., and the London Electric Supply Corporation, a pressure of 110 volts being employed for all the lighting and 220 volts for motors, fuses, etc.

The stage equipment comprises an immense switchboard over a gallery at one side, a vast array of regulators for "dimming" and special effects, seven 52 ft. battens of lights (each having 250 lamps) over the stage, and a multitude of "hanging lengths," "bunch lights," etc., comprising altogether more than 2,400 glow lamps, mostly in three different colours. By these means, with the addition of 18 arc lamp projectors (9 on the stage and 9 in the auditorium), any desired effect can be obtained; in fact, it is astonishing to see how the stage may be flooded with light of any colour, and then darkened or softly altered to any other colour, with the utmost nicety.

The regulators, it may be explained, act through a series of resistances, which can be thrown in or out of the circuit as required.

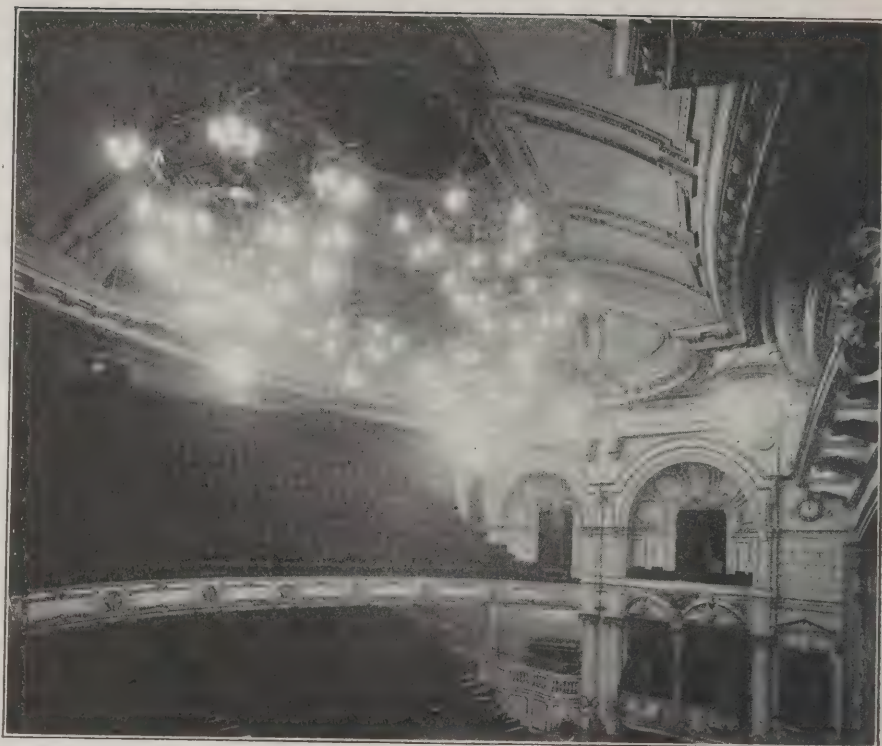
On the stage side there are to be noticed, also, an electric lift of the semi-automatic push-button type, by means of which a portion of the stage 20 ft. by 10 ft. can be raised or lowered for special scenic effects; and an electrically operated "Vortex" suction cleaning plant, in connection with which a system of pipes is laid throughout the house; thus, by connecting lengths of flexible hose to what may be called "air hydrants," the seats, carpets, etc., throughout the auditorium can be cleaned of dust

and dirt, which is drawn into the cleaning plant, and discharged into the drains.

The lighting of the auditorium is shown by the accompanying photographs. There are two 50-light electroliers (each 12 ft. by 9 ft. in diameter) fixed in the ceiling, and a large number of smaller fittings, all of Georgian character, in keeping with the general style of the decorations. The glow lamps are of the Siemens "Tantalum" and "Onewatt" metal filament type, the total number of these lamps in the whole building being close on 4,000. All circuits are protected by Siemens "Zed" fuses, which ensure the absolute security of the installation, owing to the great ease and rapidity by which the "blown" cartridge can be replaced, and also by reason of the fact that it is impossible to replace one by another of a larger or smaller capacity. Notable, too, are the "Holophane" reflectors, which distribute the light in the most perfect way.

Altogether the installation is a most interesting one, and when it is remembered that in addition to the equipment already described there are numerous telephone systems, electric bell circuits, arc lamps, electric fans, and other fittings, it will be understood that the design and execution of such an installation is a matter demanding wide experience and full knowledge; and the engineers and electrical firms responsible for the work are therefore to be congratulated on the remarkably successful result they have achieved. The length of electric lighting wire installed amounts to no less than 30 miles, and the length of enamelled steel conduits to no less than 8 miles.

The London (Bridges) Bill promoted by the City of London Corporation with the object of obtaining sanction for the St. Paul's Bridge scheme has passed the second reading without opposition. It will, no doubt, be strongly contested in the Committee stage, there being no fewer than 36 petitions against it; among the petitioners being the Dean and Chapter of St. Paul's and the R.I.B.A.



VIEW OF PALLADIUM. THEATRE OF VARIETIES, LONDON. SHOWING CEILING ELECTROLIERS ALIGHT.



VIEW OF PALLADIUM THEATRE OF VARIETIES FROM STAGE

NOTES FROM PARIS.

The Central Society of French Architects held its annual general meeting on January 16th, under the presidency of M. Girault. The chief subject under discussion was the proposal to federate the various societies.

The Peruvian Government has signified the intention of appointing a Frenchman as architect-constructor. The architect would be entrusted with the control, under the Ministry of Public Works, of the architectural section of the Lima School of Engineers. The salary is to be about equivalent to £50 a month, with two years' agreement, and passage out and home paid by the Government. An ex-student of the Ecole des Beaux-Arts will be preferred.

MM. Chastenet and Messimy have lodged an interpellation complaining of the neglect of votes of the Chamber concerning the defence of the artistic interests of the City of Paris, which, they declare, are becoming "more and more compromised," as much by their abuse as by failure of the Prefecture of the Seine to enforce its powers.

The number of accidents occurring to workmen in France during the year last past, and resulting in incapacity for more than four days, was 383,249, as compared with 369,027 during the preceding year. The metal-working industries show the greatest number of accidents—277 per 1,000 workmen; stoneworkers come next with 156 accidents per 1,000 workers.

The Minister of the Interior has been authorised to disburse a sum not exceeding 340,000 francs on the representation of France at the forthcoming International Exposition of Hygiene at Dresden.

At a meeting of the Academy on February 11th, M. Daumet communicated the report of an investigation made by M. Birot, architect, at Vienne, in the Isère, and curator of the museum of that town. The report has reference to an ancient mound, 325 ft. long by 65 ft. long, beside the Rhône, which is thought likely to prove of considerable archæological interest.

The Fédération Centrale de Bâtiment held, on February 12th, at Rouen, its annual general meeting. The chief matters under discussion were the laws relating to strikes and industrial accidents, the latter being characterised as a standing menace to employers because of the abuses to which it gives rise. It was suggested that employers should combine in a scheme of insurance against the losses incurred in consequence of local strikes.

The Godebœuf competition of the Ecole des Beaux-Arts, for designs for a metropolitan railway station, has resulted in the following awards: Prize for foreign students, and first-class medal, M. d'Amato (Laloux). Prize for French students, and first-class medal, M. Castel (Bernier). First-class medals, MM. Debat-Ponsan (Laloux) and Girardin (Paulin). Second-class medals: MM. Ansaloni (Defrasse), Barbotin (Laloux), Bonhomme (Héraud), Bossis (Laloux), De la Bouglise (Lambert), Canuzat (Pascal), Cassagne (Laloux), Chaurès (Pascal), Deveraux (Paulin), Gabriel (Paulin), Gelis (Lambert), Van Alen (Laloux), and Vaudry (Paulin). There were 147 mentions.

The Société des Architectes Diplômés has celebrated by a banquet the admission of the thousandth member. M. Dujardin Beaumetz presided, and among a distinguished company were the Ambassador of

the United States and a representative of the President of the French Republic. The chief speaker was M. Bonnier, president of the society.

COMPETITIONS.

Water Supply Scheme, Alnwick.

Eighteen schemes were submitted in this competition, and that proposed by Messrs. Paterson and Nicholas, of Bradford, has been awarded the premium.

Carnegie Library, Clydebank.

Clydebank Town Council have agreed to appoint as assessor in this competition Mr. James Miller, of Glasgow, who was the architect of the Glasgow Municipal Buildings, who is to be consulted as to whether the competition shall be limited or open.

Trevor Estate.

The awards in this competition are announced as follows: First premium of £100, Messrs. Horace Field and Simmons and Mr. C. Farey, 1, Langham Chambers, W.; premiums of £60 each to Mr. W. G. Wilson, 5, Bloomsbury Mansions, W.C., and to an author whose identity has not yet been disclosed; premium of £30, Mr. Ernest Schaufelberg, 8, Manor Road, Richmond.

Llandrindod Pavilion.

The Llandrindod Wells Urban Council have considered the report of the assessor (Mr. W. Scott Deakin, of Shrewsbury) in reference to the competitive scheme for plans and specifications for the proposed pavilion on the recreation ground. The first premium went to Mr. W. Alec Millward (surveyor) and Mr. H. Moss (Bradford), the second to Mr. W. Beddoe Rees (Cardiff), and a special to Mr. A. Swash (Llandrindod Wells and Newport). The proposed expenditure is £5,000.

Queen Victoria Memorial, South Shields.

A meeting of the general committee of the Queen Victoria Memorial Fund at South Shields was held on February 8th. The town clerk read a report of the executive committee which had considered the various designs submitted. Two models were placed before the committee from which to make their final choice. They were those of Mr. Albert Toft, of London, and Mr. F. W. Doyle Jones, of West Hartlepool and London. After discussion it was decided to accept that of Mr. Albert Toft. The cost will be £1,000. The late Queen's statue will be 9 ft. in height, of bronze, upon a pedestal of Aberdeen granite 12 ft. in height. It will be placed in front of the Municipal Buildings.

LIST OF COMPETITIONS OPEN.

FEB. 28. SEWERAGE SCHEME, CORBRIDGE.—Schemes for sewerage and sewage disposal for the village of Corbridge are invited from duly qualified engineers. Particulars from M. Waugh, sanitary inspector, the Mount, Haydon Bridge, or from the Clerk to the Parochial Committee, E. Pearson, Corbridge.

MARCH 1. FREE LIBRARY, PENISTONE.—Competition limited to architects within thirty miles of Penistone.

MARCH 15. THEATRE AT SAN SALVADOR.—Particulars in our issue for October 20.

FEBRUARY 17—MARCH 24. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and

estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums, not exceeding £250, for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. J. S. Reay, F.R.I.B.A., has been appointed assessor. Applications were to be made by February 17th. Designs, March 24th, Town Clerk, Guildhall, Swansea.

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Prof. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 1. "OWEN JONES" COMPETITION FOR WALL-PAPER DESIGNS, etc. Designs to be submitted to the Board of Education by April 1. The competition is open to students in schools of design. Six prizes are awarded by the Society of Arts, John Street, Adelphi.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

DEVELOPMENTS AT ROSYTH.

The successful closing of the western coffer-dam at the Rosyth Naval Base opens the way for a new departure in the construction of the works. Pumping operations within the enclosed area in which the three graving docks are to be built are forthwith to be begun, and employment will be provided immediately for a larger staff of men than the 1,860 reported by the First Lord of the Admiralty in the House of Commons. Mr. McKenna has just made an arrangement with the Town Council of Dunfermline, which will hasten the building of the necessary sewage works and encourage the Corporation to proceed with the promotion of their Provisional Order for the extension of the burgh boundaries so as to include the Rosyth district. In giving this as yet practically unoccupied district the benefit of municipal lighting, watering, road-making, and maintenance, and in applying to its development the provisions of the Town Planning Act the Corporation will necessarily have an un-

remunerative outlay for some time, but the Admiralty, it is understood, are willing to bear the half of the annual outlay until assessable subjects make their appearance, and at the same time contribute nearly one-tenth of the cost of the new sewage works which are indispensable for the base.

RETAINING WALL EXPERIMENTS.

The lack of agreement between the usual theories concerning the pressure of earth on retaining walls and the actual pressures observed in experiments made with small rotating retaining boards recently led Professor William Cain to make a critical study of the subject. The results of his recent investigations, given in an elaborate paper in the January "Proceedings" of the American Society of Civil Engineers, indicate that the lack of harmony between theory and experiment is due to neglecting the influence of cohesion in practical formulas. This is expressed by the author as follows:

1. When wall friction and cohesion are included, the sliding-wedge theory is a reliable one, when the filling is a loosely aggregated granular material, for any height of wall.

2. For experimental walls, from 6 to 10 ft. high, and greater, backed by sand or any granular material possessing little cohesion, the influence of cohesion can be neglected in the analysis. Hence, further experiments should be made only on walls at least 6 ft., and preferably 10 ft. high.

3. The many experiments that have been made on retaining boards less than 1 ft. high have been analysed by their authors on the supposition that cohesion could be neglected. This hypothesis is so far from the truth that the deductions are very misleading.

4. As it is difficult to ascertain accurately the co-efficient of cohesion, and as it varies with the amount of moisture in the material, small models should be discarded altogether in future experiments, and attention should be confined to large ones. Such walls should be made as light, and with as wide a base, as possible. A triangular frame of wood on an unyielding foundation seems to meet the conditions for precise measurements.

5. The sliding-wedge theory, omitting cohesion but including wall friction, is a good practical one for the design of retaining walls backed by fresh earth, when a proper factor of safety is used.

TRADE AND CRAFT.

Odourless Closets.

The total suppression of "bad smells" from w.c.'s is a greatly desired consummation, and the Vento Syndicate, 12, Alford Street, Leeds, have, after much experiment, invented a special means of effecting this object. They employ an electric fan, which is usually fixed at the back of the basin, whence (the basin being specially constructed with a ventilation horn to which air-extraction piping is fitted) it instantly extracts all smell while the closet is being used; the foul air never being allowed to rise to the top of the basin. The fan requires only about as much electric current as an ordinary eight-candle-power lamp. It can be connected from any existing wires, and is only working while the seat is depressed by the user. The system should render specially welcome service in hotels, hydros, etc., where w.c.'s are in constant use, and where freedom from odour is a valuable business consideration, as well as an important sanitary safeguard.

A New Revolving Cowl.

A cowl of novel design, for which several important advantages are claimed, has been shown to us by a representative of Messrs. Horrell and Bowman, Moseley Road, and 33, Newhall Street, Birmingham, the patentees and manufacturers. The most distinctive feature of the cowl is that a free way is left in the flue pipe for the smoke and carbon deposits from the fire, and for the sweep's brush to come right through, the revolving apparatus being designed on a new principle, by which a clear passage is left for the smoke and for the sweep's brush. The cowl revolves on yellow metal wheels, which, working on aluminium bearings, are set at an angle that by careful experiment was found to be most convenient for the purpose, and are furnished with a knife-edge on the rim. They run round the outside of the flue-pipe. It will be seen from the accompanying sectional illustration that these wheels are carefully guarded from the weather by means of the top ring, and that all the working parts are beyond the reach of smoke, corrosion, or other clogging influences, and consequently remain sensitive to the slightest current of air; moreover they require no lubricant. The relative positions of the cowl and the wind

vane, and the instant responsiveness to every change, ensure a constant up-draught. The vane and top are of copper, the pipe being of cast-iron, while aluminium is judiciously introduced in positions for which it seems most appropriate. As the construction throughout appears to be sound in principle and execution, while the materials are eminently durable, the claim that the cowl is "practically indestructible" seems to be well founded. The cowls first fixed are found on careful examination to be in thorough working order, and in the best possible condition after more than six months' service. They are very easily and quickly fixed in position. We understand that the firm are willing to supply the cowls tentatively—that is to say, they would be willing to take back a cowl that might happen to be found unsuitable to the position to which it was assigned; so strong is their confidence in its efficacy in improving the suction of a chimney and overcoming the intolerable nuisance of a smoky grate.

FEDERATION NEWS.

Oldham and District.

The twenty-second annual general meeting of Oldham and District Master Builders' Association was held at Café Monico, Union Street, Oldham, on January 26th, Mr. F. Whittaker in the chair.

The secretary read the annual report, which was adopted, and the statement of accounts for the financial year was considered satisfactory and also adopted.

It was unanimously resolved that Mr. F. Whittaker (managing director of Messrs. Emanuel Whittaker, Ltd.) be elected president for the current year. A resolution was passed altering Rule 10 so as to provide for past presidents acting as ex-officio members at any and every meeting in connection with the association.

The question of adopting a new rule as follows was then considered:—"Members must not give 'whole' tenders for all branches of work in connection with any contract when separate tenders are also required from each or any branch trade." It was resolved, after full consideration, that the matter be deferred until next half-yearly meeting, but that in the meantime the matter be dealt with by the Executive Committee, and if possible the architects' views obtained. — COWPER AND DEAN, Secretaries.

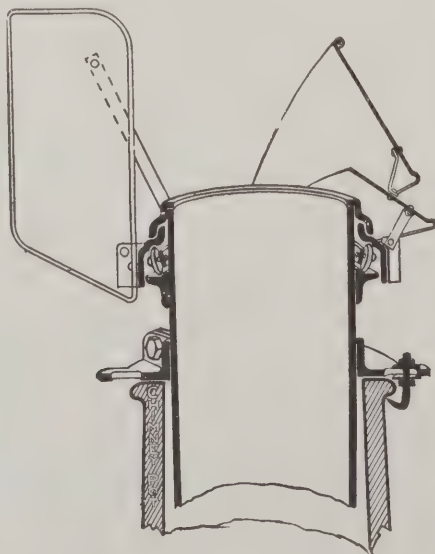
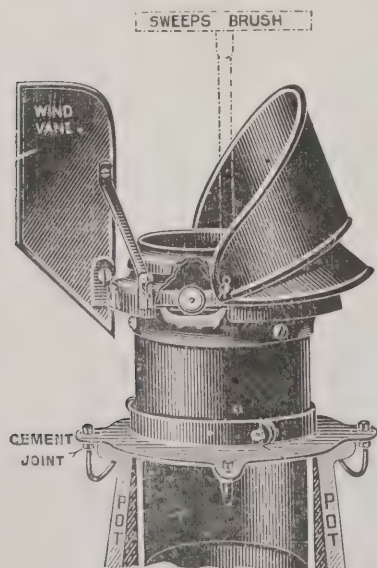
Sheffield.

The annual meeting of Sheffield Master Builders' Association was held at the Builders' Exchange on February 8th, the president (Mr. Wm. Longden) in the chair.

Finance.—The annual report detailed the year's operations, and stated that the association, as a corporate body, had passed through the most successful year of its existence. Its finances stood at the highest point. The amount collected during the year for subscriptions was the highest on record, and although the association had made the largest contribution to the funds of the Yorkshire Federation, and had paid an extra sum on account of National Reserve Fund, in order to redeem its promise up to date, yet it had been possible to transfer from the income and expenditure account the largest surplus ever transferred in one year to the capital account, and to invest a further portion of its surplus funds. The capital account, as certified by the auditor's report, stood at nearly double the amount it did on Dec. 31st, 1907. The membership still continued to increase, and the relations with all the operatives' societies were of a most friendly nature.

Election of Officers. — Mr. Wm. Longden was unanimously re-elected as president, this being the only occasion, with one exception, that a president has held office for two years, since his father occupied the position in 1900. Mr. Chas. Boot was unanimously re-elected as vice-president, and Mr. A. T. Biggin as treasurer. For the twelve places on the committee, there were 19 nominations.

The monthly meeting of the association followed immediately on the annual meeting. One of the chief items considered was the question of payment for carrying tools from job to shop, when a man had been employed in some of the local works. The association agreed with the Operatives' Society that the carrying of tools constituted working time. The difficulty was that men were not allowed to leave works in time to take their tools to the yard by stopping time. Some members, however, pointed out that the works had allowed this time when the matter had been pointed out to them, and members were requested to communicate with the secretary in any case of difficulty. If a man's time were booked from leaving the shop to go to a job, it seemed only fair that the return journey should be equally treated. — THOS SMITH, Secretary.



A NEW TYPE OF REVOLVING COWL.



CENTRAL LIBRARY, HOLLOWAY ROAD, ISLINGTON



DON. HENRY T. HARE, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MARCH 1st, 1911.

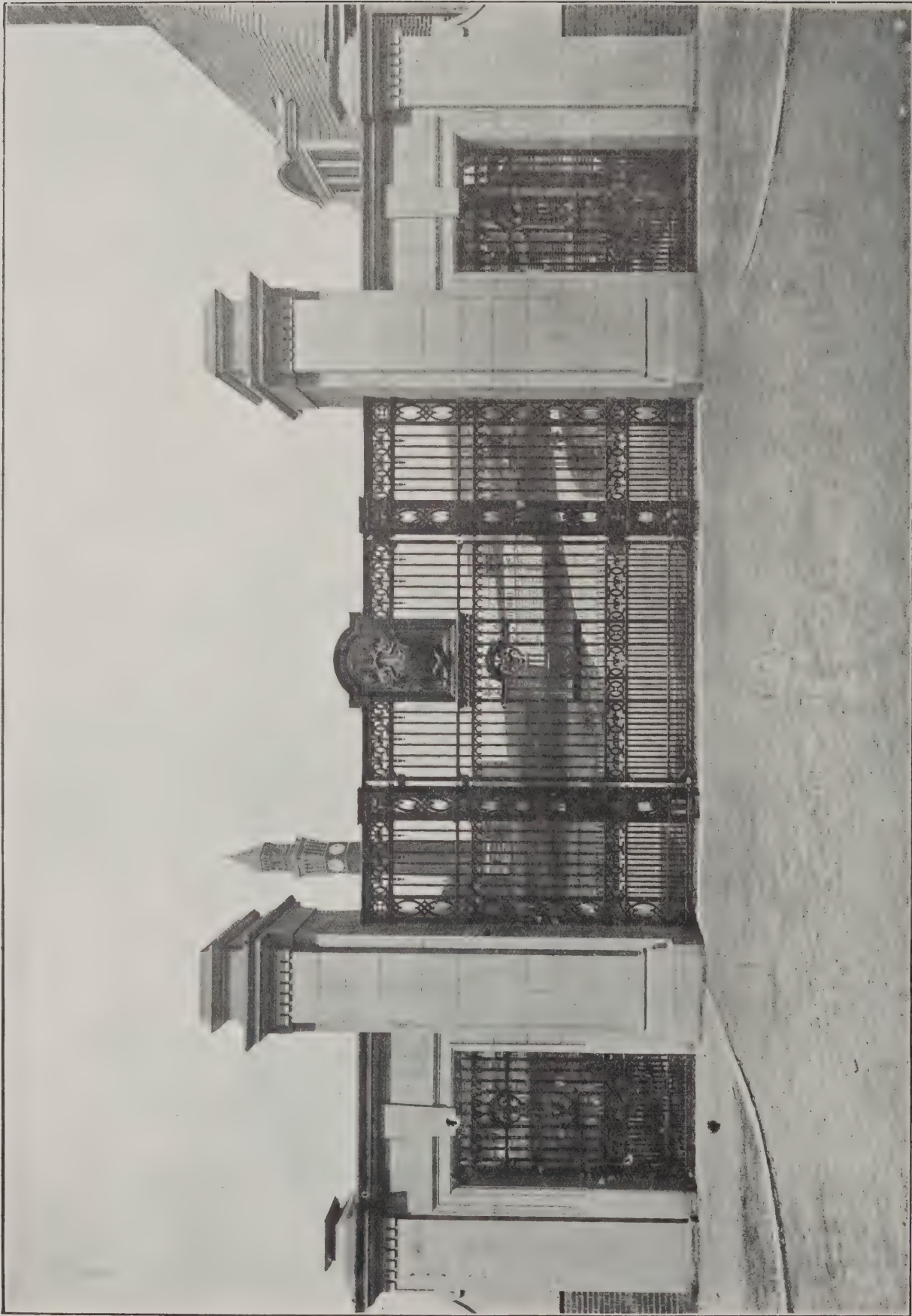
Volume XXXIII.

No. 840.



This stair leads up to the chambers on the upper floors of the
"Back Building," which is reputed to be the work of Inigo Jones.

STAIR IN THE BACK BUILDING OF CHRIST'S COLLEGE.
CAMBRIDGE.



NEW ENTRANCE GATES, BIRMINGHAM UNIVERSITY. SIR ASTON WEBB, C.B., R.A., AND E. INGRESS BELL, F.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

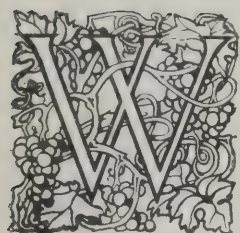
MARCH 1st, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 840.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Materials for Town Building.



WE may congratulate Mr. W. G. Newton on having contributed a very able and well-written paper to the Architectural Association on the thesis "that brick is eminently suitable for large town buildings"; a paper which shows that to his acquirements as an artist, recently displayed in his remarkable set of drawings submitted for the Tite

prize, he unites considerable literary ability. With some of his conclusions we should be disposed to agree; but the argument from ancient precedent is not very happy. Brick at all events does not seem to have been used in ancient times except when they could get nothing better. The remains of the Persian palaces of the Achaenidæ now stand as isolated columns and door-frames of stone, from between which the brick walls have disappeared. These, however, were probably unburned sun-dried bricks, and therefore doomed to destruction by time and weather. The Egyptians, in spite of one example of a brick pyramid quoted by Mr. Newton (the praise of which was evidently a piece of "brag" by a man who could not or would not go to the expense of stone), habitually used brick only for inferior utilitarian buildings. The Romans made splendid bricks, but they used them chiefly as a core for facing with marble or cement. Greek architecture, as it has come down to us, knows nothing of brick. Gothic architecture is almost exclusively masonic, except in some districts of North Germany and Holland, where stone was scarce, and materials for brick abundant. In short, no great building people who could command plenty of stone have ever been content to use brick for their important and monumental buildings.

The argument from precedent, therefore, goes for very little; and in any case it is beside the question. If brick is the best for modern town building under present conditions, we need not trouble as to whether it was thought so 2,000 years ago, and in a different climate from ours, and where the atmosphere of towns was not so clogged with chemical impurities as it is in most northern towns of the present day.

In regard to duration, under these unpropitious circumstances, there is no doubt a great deal to be said for brick. It is more weather-resisting and more fire-resisting than stone. And in regard to the question as between town and country, brick is better suited to the artificial conditions of towns, because it is itself an artificially prepared material, and we cannot agree with a speaker in the discussion who thought that brick was well enough in the country, though we required a more pompous material for town buildings. If there is a fairly good local building stone in any country district, one can hardly do better than use that, because a natural local material, even after being dressed for building, preserves a certain harmony of tone with the district out of which it is hewn. Therefore we say, if a house is to harmonise with the landscape, use local material where possible. But brick, even where there are local materials for it, is out of this category, because it is not a natural, but a cooked, material; "the smell of fire has passed on it."

So far, then, we may say that brick is better suited for town than for country architecture; but then comes the question, for what kind of town architecture? We cannot get over the fact that, for all its good practical qualities, brick can hardly be called a noble material. Even its weathering capacity is somewhat discounted by the fact that, owing to its rough texture, it catches and holds a great deal of the dirt of the town atmosphere, and becomes dingy and depressing in appearance. Portland stone, which seems on the whole to stand as well as brick, weathers in a much more agreeable and picturesque fashion. The President of the Association, though he summed up against the use of brick in towns in a general way, cited the Doge's palace as an example of its monumental use. It is curious how we have accustomed ourselves to accept that rather preposterous piece of architecture, and see nothing wrong in it, from mere habit, and its association with the most picturesque of cities. That beautiful arcade of the Doge's Palace was never intended to have anything built on it at all; the upper storeys of the palace were to have been erected on the second plane, as we may say, of the composition, behind the terrace. The erection of the brick wall with the chequer-work on it, upon the beautiful and delicate stone



STONE AND BRICK: A BUSINESS BUILDING IN NEW YORK.



THE MUSEUM AT DUBLIN: A BUILDING THAT COULD ONLY BE CARRIED OUT SATISFACTORILY IN STONE.

arcade, was a mere piece of utilitarianism carried out in order to get more floor space in the upper storeys. If it had been done in the present day it would have been called a piece of gross vandalism, and there would have been a public outcry about it.

No, brick is unquestionably not a material of the noblest kind, nor suitable to the most dignified type of building. Look at this illustration of the Dublin Museum, for instance; one which we have picked haphazard out of a heap of photographs as serving to illustrate the point. It may be said to be academic, but there can be no doubt that it is dignified; and can anyone possibly imagine that design carried out with the same dignified effect in brickwork? We feel some sympathy with the proposal by Mr. H. Hall in the discussion, that a future Minister of Fine Arts should have the duty of deciding whether stone should be used for a new building, or it should be relegated to the use of brick, as the inferior material; the speaker's theory being that no one should be allowed to use stone unless his design were worth it. But then we might add—should he be allowed to use brick, either, unless his design were worth it? And it must be remembered, too, that the two materials require a quite different kind of treatment. A brick building should never appear to be an attempt to do clumsily and with difficulty what could be better done in stone.

Brick, as Mr. Keen observed, requires an arched style; and in that sense the late Mr. Brooks's large brick churches were fine examples of the use of brick in obtaining large churches of a solid and massive character, at comparatively small cost. And we do not quite agree that buildings with arched openings are practically unsuited to city life, on account of deficiency of light. People are rather exacting and unreasonable, sometimes, in this matter of light; they are not content with having sufficient light as long as there is any more lighting space that

they *might* have, and think themselves aggrieved unless the wall is all window. Many rooms in modern offices are really over-windowed; but as long as a tenant sees part of his tight cut off by the spandrel of an arch he always fancies he wants that additional piece of window.

It is not, therefore, the necessity of arching, it is the want of architectural dignity in the material itself, which renders brick unsuitable for the most dignified, and monumental class of city buildings. But it may be very finely and effectively used in combination with stone, as presenting a contrast of texture and tone. We see this very effectively done in the Scotland Yard building, and the accompanying illustration of a business building in New York is another good example. This kind of broad contrast of surfaces is quite a different thing from the commonplace system called "brick, with stone dressings," which is essentially unarchitectural.

Of other possible materials for town building, we differ from the President of the Association in thinking that terracotta is much more associated with brickwork than with masonry; it is, in a sense, like brick, a cooked clay, and therefore a different class of material from either natural or artificial stone produced by pressure of the component materials. The danger of terracotta lies in the temptation it gives to over-exuberance of modelled detail, by which various important buildings have already been vitiated; and yet without that it hardly seems to have its *raison d'être*. Some of the washable materials with a glazed surface, which have been introduced of late years, have undoubtedly a hygienic value for cities, besides the quality of resisting atmospheric deterioration (at least we are led to expect this); but architects are not as a rule fond of glazed surfaces in buildings, though it must be admitted that a good deal remains to be done with the newer materials. Unpolished white marble, as in Mr. Belcher's building at the top of St. James's Street, is a new and very interesting experiment; nothing could look better and more dignified; how it will shape in the matter of duration, in the London atmosphere, time alone can show.

The combination of unpolished granite with brickwork, in opposed masses, is always effective. Polished marble opposed to ordinary building stone should offer a rather decided contrast of colour to be effective; in one or two recent instances we have noticed, the marble is too dull and uncertain in



A: Bricks 9 by 4½ by 2½ in English bond, 3 courses of stretchers to 1 of headers: 6 courses taking 31 bricks.



B: Bricks 12 by 6 by 2 in four courses of stretchers to 1 of headers: eight courses taking 32 bricks.

colour to be sufficiently effective as a contrast to the stone, and might even be passed over unnoticed. And marble courses introduced in stonework should not be of a strongly marked or mottled marble, as in that case the marking interferes (to the eye) with the clean and precisely cut line of demarcation which there should be between the marble and the stone courses.

To return again to brick, we may add that there would be a much better effect in brick buildings if we could ever get the standard size of brick altered to a thinner and longer shape. Whenever a thinner brick is proposed there is the economic objection that it involves greater expense in building, from increasing the amount of bricklaying. But this would be hardly appreciable if the lateral size of the brick were somewhat enlarged at the same time that the thickness is reduced. The accompanying diagram shows on the left six courses of standard brickwork, which in the space given takes 31 bricks (counting in those which only come partly into the diagram) in a height of $16\frac{1}{2}$ inches; we are purposely omitting consideration of the thickness of the mortar joints, which is variable, and does not affect the comparison. On the right hand is shown eight courses of bricks 12in. by 6in. by 2in., which takes 32 bricks in a height of sixteen inches. Thus this makes hardly more bricklaying in the same space of wall, nor are the separate bricks much heavier or any more inconvenient to handle than the standard brick; and it would make a far finer-looking wall; moreover, the 12-inch wall might be efficient where a 9-inch wall is not. Of course it would require something even more drastic than an Act of Parliament—something

akin to a revolution—to bring about a change in the shape and size of anything so sacred as the household brick; but it is worth while pointing out that it is not, after all, the best of all possible bricks.

The Forthcoming Building Exhibition.

THE ninth biennial Building Trades Exhibition will be opened at Olympia, Addison Road, Kensington, S.W., on Saturday, April 22nd, by Mr. Leonard Stokes, President of the Royal Institute of British Architects, and will remain open until May 6th. The exhibition, organised by Messrs. H. Greville Montgomery and Mr. Hugh C. Montgomery, is held every other year; and probably there is not another exhibition of any kind which can so successfully fill the huge building at Addison Road—main hall, annexe, and galleries—from end to end with exhibits strictly pertaining to the industry immediately concerned. As before, the galleries will comprise a municipal section for the special benefit of borough surveyors and engineers; whilst the whole of the ground floor is devoted to the multifarious requirements of the architect and builder. The wall which used to separate the main hall from the annexe has recently been removed, the result being that the stands will run continuously from the entrance in Addison Road to the exit in Blythe Road. Arrangements are being completed for official visits of numbers of the many associations and societies connected with the building industry, and in view of the improved prospects for trade, there is every reason for confidence that the Exhibition of 1911



A BRICK CHÂTEAU IN BELGIUM.

will be even more successful than those of former years. It will of course, as before, be specially and adequately treated in this Journal.

The keynote of any exhibition is—Concentration. The value of the principle was no doubt in some respects greater in the days when the means of transit were primitive, and when frequent fairs, wakes, and bazaars were necessary for the expansion of industry. They found their highest development in the world-famous fair of Nijni-Novgorod, which was at one time an event of supreme influence on the world's commerce. That the great Exhibition of 1851 was but a better organised extension of the ancient system of fairs is recognised by calling some of its successors "World's Fairs." Exhibitions of the World's Fair order are doubtless incalculably useful in promoting business and spreading information; they both gather and scatter. But there is a sense in which they are obviously inferior in concentrative force to their legitimate offspring, the trade exhibition. At an exhibition like that which has been for so many years successfully organised by Mr. H. Greville Montgomery and Mr. Hugh C. Montgomery for the building industry, concentration is respected to the fullest possible extent. Nothing extraneous is admitted, and it may be assumed that the bulk of the visitors have a keenly practical interest in the objects collected in such large numbers from the four corners of the kingdom. The Building Exhibition affords to traders an invaluable opportunity for the concentration of their goods, and to professional men a most convenient means of inspecting them. The vendors, the goods, and the prospective customers are concentrated for a given period at an accessible place. Nor is the exhibition merely a valuable device for effecting thus much of mutual advantage. It is a social as well as a business rendezvous, bringing about many enjoyable meetings of old friends, who, scattered as widely as the various goods on show, come together as rarely, and are grateful for the periodical provision of a rallying ground where business and pleasure may be blended.

R.I.B.A. Prizes and Studentships, 1912.

IN the list of R.I.B.A. prizes and studentships, 1912, the special subjects for competition are announced as follows: The subject for the Essay is "The Principles to be observed in Designing and Laying-out Towns treated from the Architectural Standpoint." The Soane Medallion is offered for the best design for a guildhall of monumental character. The subject for the Tite Prize is "the best design, according to the methods of Palladio, Vignola, Wren, or Chambers, for the Central Courtyard of a Royal Exchange, covered with a Roof." The Grissell is offered for "the best design for an isolated exhibition building of fire-resisting construction, suitable for a temporary picture gallery, in the grounds of an exhibition held in London." Full particulars of the other prizes and studentships are given in the list, for which application should be made to 9, Conduit Street, W.

The Streets of Rome.

IT appears that the municipality of Rome have allowed the streets of the Eternal City to get into such a disgraceful state that a phalanx of members of the Chamber of Deputies have called on the Government to interfere and compel the municipality to do their duty. It is stated that there is hardly a street in Rome which has not, during the last three months, been "up" from end to end, and then left unpaved and encumbered with *débris*. The call for Government interference in such a matter is an almost unprecedented event, and leads to the conclusion that things must have come to a very bad pass before such an appeal was made. But it is perhaps a precedent worth considering. We have frequent complaints in London that streets are taken up exactly at the times when the operation causes the greatest public inconvenience. Perhaps a little Government pressure might be useful in own case.

New Light on Abbotsford.

THE recent death of Miss Smith, of Darnick, was made the occasion of an interesting communication to the "Scotsman," with reference to the building of Abbotsford. Miss Smith's father, it appears, was one of the builders of Abbotsford. The brothers Smith were, it is stated, accomplished architects, one of them—the recently deceased lady's father—being "considered by some to have a touch of genius," and they would not, as a rule, brook any interference with their designs. Sir Walter, however, who desired to be his own architect, greatly wanted the co-operation of the brothers, who, out of admiration for the genius and affection for the man, consented to humour his whim, and to build, for once in a way, from designs for which they were not altogether responsible. Their reluctance to assume the responsibility of building under Scott's supervision is traditional in the family, but, it is believed, has not been previously recorded. It might, however, have been very naturally assumed; for Scott, with his wealth of historical knowledge, and his highly imaginative mind, must have seemed a phenomenally formidable client.

Royal Institution Lectures.

ON Saturday last, Mr. T. G. Jackson concluded his series of lectures on Byzantine and Romanesque architecture, dealing in this lecture with Romanesque in France and England. He described at the outset the high state of culture in Gallo-Roman society in the fifth century, mentioning especially Sidonius Apollinaris, and his account of a church at Lyons, of which relics remain. Southern France was full of Roman remains, which exercised a great influence on the architecture of the period; but French Romanesque acquired no general style, but fell into distinct styles in different provinces. St. Front, at Périgueux, was a direct imitation of St. Mark's, but otherwise the churches of Western France represented a combination of domed structure with the Basilican plan. Provence was very strongly influenced by Roman remains, but showed no element of a progressive style. Burgundy, which was the centre of the monastic movement, though also strongly influenced by Classic example, showed much more progressive tendency in the direction which ultimately led to the development of the Gothic style, the Abbey at Vézelay being a remarkable instance of this. In England, the Romans, who had been there for several centuries, must have left a great many buildings behind them, and the country was full of large Roman villas, some of the remains of which suggested that their architects had modified the Roman house plan in order to suit the new conditions of climate. Saxon architecture was obviously based on rude attempts to imitate Roman work. The Romanesque style of Normandy came over into England with Edward the Confessor; but the great impulse was given to it with the extensive Norman church-building which set in after the Conquest, and had left its mark everywhere among our cathedrals and churches. There was little ornament in the early Norman buildings in England; what sculpture was attempted was exceedingly bad; but there was an undeniable grandeur about much of this massive and simple building. The later Norman architecture in England showed, however, a great improvement in delicacy and refinement of detail. The period of architecture which they had been considering would perhaps not appeal to all; those who were wedded to Classic tradition and conventional rules would no doubt regard it as more or less barbarous; but it was a period of the greatest interest in regard to the development of architectural style, and prepared the way for the great achievements of complete Mediæval architecture. The concluding lecture, which was very largely illustrated, was somewhat better attended than the other two. If the lectures should be published in a more permanent form they will be very useful as an historic summary of the period with which they deal, and it is to be hoped that they will be made thus available.

IN PRAISE OF BRICKWORK.

BY W. G. NEWTON.

In a paper read before the Architectural Association on February 20th, Mr. W. G. Newton put forward the proposition "That Brick is eminently suitable for town buildings," claiming that brick is more durable than natural materials, and that brickwork may be rendered beautiful.

THE great Central Asiatic civilisations built with brick. Herodotus's account of the building of Babylon, with its kiln-burnt bricks, can be verified to-day. The Palace of the Kings, also, which remains even to this day as a square of 700 yards in length and breadth, is a great "pile of brickwork, chiefly of the finest kind." No less do modern travellers find half sunk in the drifting sand on the Afghan frontiers of Persia the brick walls and domes and tombs of cities of a thousand years ago. The bricks at Zaidan are partly sun-dried and partly kiln-burnt. Probably they were all covered originally with mud or stucco; perhaps painted in bright colours, like the seven walls of Ecbatana.

Egypt.

"The use of crude brick," says Canon Rawlinson, "was general in Egypt for dwelling-houses, tombs, and ordinary buildings, the walls of towns, fortresses, and the sacred enclosures of temples. Even some small ancient temples were of crude bricks." And Herodotus tells us that the King Asychis, "desirous of eclipsing all his predecessors on the throne, left as a monument of his reign a pyramid of brick. It bears an inscription cut in stone, which runs thus:—'Despise me not in comparison with the stone pyramids; for I surpass them all as much as Zeus surpasses the other gods.'" It was built of bricks made from lake mud.

Athens.

Athens after the battle of Salamis was largely built of sun-dried bricks, as we may infer from the fact that Themistocles' hurriedly built city walls were of this material (except the lowest 4ft.), and that for these walls private houses and public buildings were recklessly demolished. But the Greeks seem to have been in the habit of covering their brick walls with a fine hard stucco made of marble dust. So fine and good was this that, Vitruvius tells us, the Romans of his day would use slabs of it, cut from old Greek walls, as tops for tables or sideboards.

Rome.

The only brick familiar to Vitruvius would seem to have been the sun-dried brick. Vitruvius describes three kinds of brick as generally used in his day. Two kinds are square. They are Greek, and are respectively 4 and 5 palms in length. The smaller were used for private buildings, the larger for public. The third kind is the Roman brick, and oblong. For an unexplained reason it is called the "Lydian."

But, after all, Vitruvius was dead before Roman architecture began—the architecture of brick and concrete which the legions were to carry with them to the Euphrates, the Rhine, the Forth. And the Roman brick, which Vitruvius had hardly seen, is familiar to the least erudite country parson.

Early English Brick-making.

It was for long the accepted theory that no buildings were built of brick from the time of the Roman occupation until the reign of Henry VI. There is on record the express statement of the inhabitants of London that down to the reign of Stephen their houses were built of wood and thatch. There is no documentary

evidence of brick building of an early date. And there is not to be found in England a building earlier than the last half of the thirteenth century of which the material is a brick which can be definitely pronounced to be other than Roman.

Yet it seems to be highly improbable that so simple and useful an art as that of brickmaking should ever have been lost. The necessity of providing tiles would surely have preserved the art of making them, and bricks are not more difficult. And as early as the year 1189 a series of disastrous fires had roused the citizens of London to seek for some method of protecting their mud walls and thatch, and one of their expedients was a close-set covering of tiles.

It seems, then, reasonable to suggest that the practice of brick-making in England, once initiated by the Roman settlers, never died, though in the cause of centuries the type degenerated.

The Spirit of the Brick Builders.

With the growth of a strong central Government, man dared to leave walled towns and live alone. Castles were turned into homes, and there rose something which the world had never seen before, the English manor-house. That was a period of the greatest significance to the student of brick architecture, a time of the building of East Barsham and Layer Marney, Sutton Place and Bramhill.

Question of Plastered Bricks.

It would, indeed, almost seem that it was only in the seventeenth century that it began to be considered normal to rely on the texture and colour of the material, and to build in bare brick. The author doubted whether it was generally realised how far mediæval buildings were covered with plaster or whitewash. He thought that there was little doubt that Hengrave and East Barsham Manor (to take two examples) were covered with whitewash or plaster, and possibly enlivened with gold and colour. Many names of places, such as Whitechapel, add force to the suggestion.

Is Endurance Wanted?

"Architecture aims at eternity," writes Sir Christopher Wren; and if this is so, the primary qualities of the material are important. We have, then, from the point of view of permanence, to compare brick with other materials—stone, concrete, and steel. Of these, exposed concrete would not withstand the action of frost, and exposed steelwork would have to be protected from the weather. And both these materials conduct noise and changes of temperature too easily to be by themselves a good material for town building. We seem to be reduced in any case to a comparison of the merits of brick and stone.

Decay of Building Stones.

(a) In General.

1. Chemical Agencies.—Ordinary rain-water, owing to the presence of carbon dioxide, can affect the felspar of granite and the calcium of limestones. Of itself this action is slight, amounting to less than a millimetre in a century. But when rain falls through air which is loaded daily with 980,000lb. of sulphur it is as if we were to syringe our buildings with sulphuric acid. Snow carries a higher per-

centage of injurious substances than rain-water. And the unburnt carbon particles from our coal fires act again as distributing agents of corrosive acids.

2. Mechanical Agencies.—Among mechanical agencies of decay must be numbered organic deposits, either decaying organic matter in the form of blown dust or living organisms, lichens, and so forth. Wind and friction are two other mechanical agents; but the most important is change of temperature. This particularly attacks the crystalline stones. And the expansive power of water freezing in a confined space amounts to a pressure of 138 tons per square foot.

(b) In Detail.

How do the various building stones stand these agents of destruction?

1. Limestone.—It is the carbonate of lime which decays under atmospheric acid; while the more crystalline limestones cannot withstand frost.

2. Sandstones.—Sandstones are attacked in the cementing matrix, which is either of a clay or a lime nature.

3. Igneous Rocks.—These, if fresh, are hardly liable to chemical decay. But they yield readily to the mechanical action of frost. Cleopatra's Needle, which could keep the sharpness of its inscriptions for 2,000 years in Egypt, has had to be treated with preservatives.

All around us is decay. London is mouldering away. And not London alone. The Clarendon Buildings at Oxford and the St. Aldate's face of Christ Church have been rebuilt in the last four years. And the air of Manchester contains twice as much acid as that of London. There is perhaps now not a stone of the Abbey which is as old as the day it was built. You cannot rebuild a masterpiece, even piece by piece, without making the whole hard and self-conscious.

And yet there is to our hand a material which can be made impervious to frost and to atmosphere. "The earth about London," Wren says in a letter to a friend who was on Queen Anne's Commission for the Building of Fifty New London Churches—"the earth about London, rightly managed, will yield as good a brick as were the Roman bricks, and will endure in our air beyond any stone our island affords."

Design in Brick.

But endurance is not all we are looking for. How far does material affect the building's appeal to the heart? And what qualities are peculiar to brick or to stone? The question before us is how far brick is a suitable material for large town buildings. And we have seen that this practically resolves itself into a question, so far as surface matter is concerned, between brick and stone. The use of concrete or of steel exposed is not general enough to warrant serious examination, though I may perhaps in passing quote from Mr. Fergusson's "History of Modern Architecture" the passage where he is discussing the newly built Crystal Palace. "Though stone," he says, "may be inappropriate, brick and terra-cotta may be employed with iron and glass with the very best effect. When so used the brickwork must be of the very best quality, so as to be pleasing in itself. Coloured bricks should be employed everywhere to give relief and lightness."

It is, then, a question between brick and stone. Let us take a brief survey of stone as a material of design.

Design in Stone.

(1) General.

There are two ways to build with stone. The one is to build with small stones, as

did the mediæval builders; the other is to build with the largest stones we can get, as did the Mediterranean civilisations, whose heirs we are. Of these, the former almost merges into brickwork; indeed, many of the Gothic revivalists acknowledged this by their work, as may be seen in a walk round the London churches built by Street, Pearson, or Butterfield. At the same time, such mediæval work has the essential difference of carved ornament where stone must be used. The ornament of brickwork is essentially either moulded or a patterned arrangement of bricks.

The fourteenth century innocence which chisels the brick niches of Beverley Bar, no less than the delicate Renaissance skill which carves the Cupid's heads in rubbed brickwork of the Enfield House (now in the Victoria and Albert Museum emphasises the truth that carving should be on stone.

(2) Details.

But there are many to whom the abstract logic of design will not appeal. To them the author would suggest that our use of Roman and Greek mouldings is hardly defensible. We use shapes that were de-

signed to give an effect of glowing depth or stark delicacy under a searching sun; and we deliver them over to our weather, to wash them unevenly with its rain, to scour them unevenly with its south-west wind, to paint them unevenly with the velvet black of its carbon. If we are going to build in stone, ought we not to take account of all this, to arrange our angles and to design our mouldings so that the rain and wind may burnish those parts which we want white, and the smoke paint here and there a darkness which no Greek temple could attain? This would ask an



ANDREW N. PRENTICE, ARCH.

These extensive alterations and additions to Notgrove Manor, Gloucestershire, have been carried out for Mr. Cunard from designs by Mr. Andrew N. Prentice, F.R.I.B.A. The plans show the new work hatched.

amount of logical thought and experimental study, and perhaps the result would be theatrical. At least it would only be suited to something monumental, some great tomb or bridge or gateway.

Zeitgeist.

But we live in an equable and kindly, rather than a monumental, age. What are the large buildings we build in towns? Not a Pantheon, rarely a cathedral; even Newgate Prison is gone. For us, large town buildings are offices and banks, flats and elementary schools, theatres and fire-stations, town halls and public libraries. It is the immensity of our towns that is monumental. No one can have looked down unmoved upon Birmingham from the G.W.R. embankment. And the author felt strongly that the note we have to strike is not a note of art and grandeur. We live in our great modern cities as our ancestors lived in the great forests. You cannot walk down Tooley Street or look over the endless roofs of Tottenham without feeling rather frightened. Our cities are great. Cannot we make them less terrible? There is a gracious homeliness about brickwork—what Charles Lamb calls “a cheerful, liberal look.” We feel it in the Temple, in Gray’s Inn, in Westminster. The author would be less frightened of calling on the King in St. James’s than in Buckingham Palace. Who does not long more than ever now to be a fireman, to live in those pleasant brick fire-stations? St. Benet’s, in Threadneedle Street, would stay his Sunday morning steps rather than St. Mary-le-Bow.

For our theatres and palaces of commerce we may use glazed bricks, beautiful as a de Morgan tile, and imperishable. We may use salted bricks, or rubbed bricks, which laugh at acids; we may fill our palette with red from Fareham, with blue from Staffordshire, with white from Suffolk, or with the rose and purple of the weathered London stock. Texture, no less than colour, is ours. With glazed bricks and rubbed bricks, with recessed joints and lime cream, and with all the varieties of bond, what may a clever man not achieve?

Conclusion.

It was, then, on three grounds that the author based the claim of brickwork in town building. Historically we see that the great building ages have not disdained it; it is essentially an English material in that it was being used most surely and most vividly just when the English genius, cut off from Italy, France, and Spain, was most surely itself. Chemically, we see that we can, by processes of manufacture, by selection of material, by careful burning, perhaps by glazing, produce something more enduring than Nature gives us. Most important of all, brickwork, in the hand of a master, may have a serenity and a kindliness which our great towns so conspicuously lack.

Discussion.

Mr. Alan Snow, opening the debate, said that geometrical planning, with its angles, long lines, and curves, required geometrical elevations, depending for their effect upon continuous horizontal lines, such as string-courses, cornices, etc., perhaps varied, but to a very limited extent, by gables, or a small group of vertical lines. It was not possible in brickwork to ensure that these lines should be strongly enough marked, sharply enough defined; they lost themselves too soon in the distance. Neither was it possible to give to the projections the boldness, and to the enrichments the clear cut expression, that was necessary for the attainment of true dignity and beauty.

Suppose we built our town building six or seven storeys high and several hundred feet long, entirely and naturally of brick. What was it going to look like? Perhaps we might rely on texture and beautiful colour. Warmth of colour and variety of texture were the distinctive qualities of good brickwork, but these same qualities, which were amongst the chief reasons for the revival of brickbuilding in our country work, could not be relied upon in our large towns. The brick was either a hard and repellent material, or its surface made of it a natural collector of soot and dust, which were inevitably present in all large towns, and which adhered to the brickwork and in time became ingrained in it, and our once beautiful piece of colour became dull and of a drab monotony. The dull surface which bricks so rapidly assumed was incapable of reflecting light, and, indeed, might be said to absorb it. Large town architecture required a larger treatment than brick would allow of; the best possible effect must be aimed at, and would not be obtained by the use of brick. In conclusion, he maintained that brick was not an eminently suitable material for large town buildings, because with it the necessary and proper effects for town architecture could not be achieved.

Mr. H. F. Murrell said that Mr. Newton’s appeal to history was not very fortunate. The Egyptians concealed their brickwork, the Greeks covered theirs with stucco, and the Romans buried theirs in stonework. Speaking with regard to the use of brickwork in cities, was it quite dignified, asked the speaker, for a large town building to have to undergo the periodical process known as “rake out and point”? Something different from that homely spirit which Mr. Newton desired was, he thought, wanted in our great civic buildings.

Mr. G. Fildes (son of Sir Luke Fildes, R.A.), cited the Campanile of St. Mark’s, Venice, as a brick building in a town. The raking-out and re-pointing of bricks was no greater an indignity than the cutting-out of portions of shaled-off ashlar from buildings like the Horse Guards, and many others. In both cases they were simply necessary reparations. Alluding to an observation by Mr. Snow, the speaker said the French used reinforced concrete because they had no brick. Mr. Newton, he thought, had substantially proved his point.

Mr. Herbert Hall said a man had no right to use stone unless he had a good design; and if ever a Minister of Fine Arts came into being, he should have the power to say whether a building should be erected in brick or in stone. Then, whenever they saw a brick building, they would know that the architect was in disgrace, and was not allowed to use Portland stone. The country was eminently suited to brick buildings, and there it was natural to provide an unobtrusive material. But in the towns one wanted to assert oneself, and accordingly used a pompous material like stone. The speaker objected to the use of brick and stone in conjunction, and disliked the practice of enclosing stone panels with a brickwork frame. Stone was a noble material for noble purposes.

Mr. D. A. Forster said he disagreed with those who stated that brick lacked boldness of appearance. There was a good deal of boldness, for instance, in the Prudential building in Holborn. One important consideration in connection with brick had been overlooked, and that was its fire-resisting qualities. For this purpose there was no better material than brick.

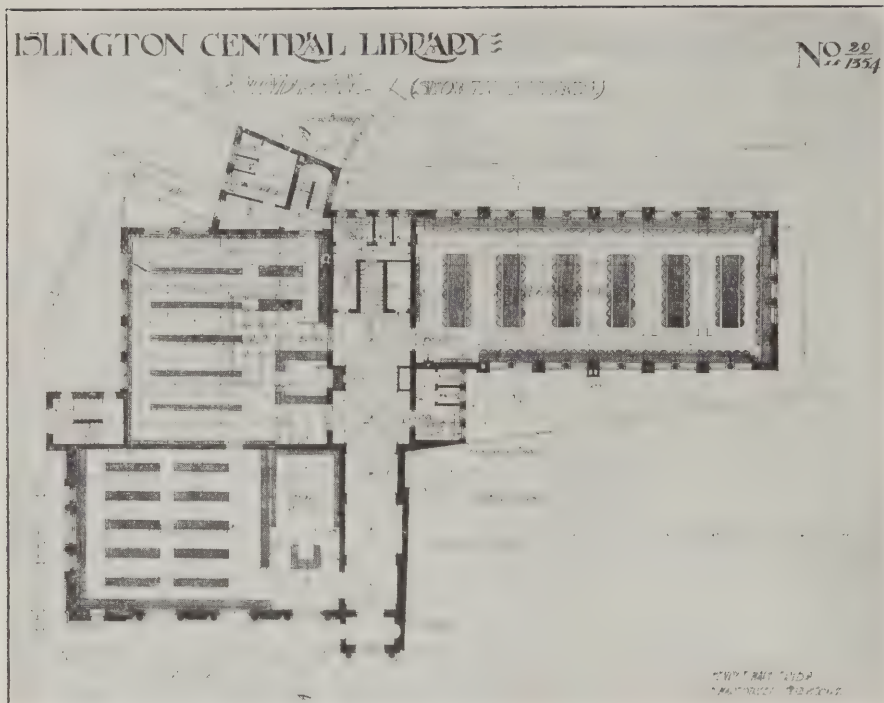
Mr. V. R. Talvalker mentioned many examples of brick buildings, and said that stone, in comparison with brick, was six times as costly.

Mr. Arthur Keen, having alluded to the pleasure it gave him to see the son of his old friend and colleague taking an active part in the work of the Association, took exception to the classification of terra-cotta with brick. Terra-cotta, so far as architectural expression went, partook more of the nature of stone. The subject under discussion should, he thought, have been argued from the architectural standpoint. Horizontal, not vertical, lines were wanted in towns, and they could not be obtained in brick. Leicester Town Hall was a most successful brick building, but a great deal of stone was included in the design. A great deal of the charm of stone building depended upon the accidental effects of weather and smoke. St. Benet’s, to which Mr. Newton had referred, was not exactly an architectural building. St. Mary Abchurch was homely and domestic, but was not treated in a strict architectural way. The body of St. Mary-le-Bow was of brick, and, though of homely character, hardly seemed to agree with one’s idea of city architecture. The Doge’s Palace seemed monumental and effective in brick—its parts were large and broad. The correct treatment of brick was arched construction, but this was unsuitable in towns. The consequent loss of light was, he thought, a strong argument against the use of brick.

Mr. Newton, in reply, and with reference to Mr. Keen’s remark concerning the atmospheric effects upon stone, enquired what would the shade of Sir Christopher Wren think of such a statement? With regard to St. Benet’s, it seemed to him that any building which could stir emotion was an architectural building. The note of serenity and kindliness was, he concluded, much wanted in towns.

A BISHOP’S HINTS TO ARCHITECTS.

In an address to the Birmingham Architectural Association at the Exchange Buildings, last week, the Bishop of Birmingham (Dr Gore) called attention to what, in his view, are anomalies and archaisms in modern church construction from the point of view of worship in the Church of England. “Constantly, when I go to churches,” he said, “I find myself required to stand on a ledge so narrow that I am continually obliged to recall myself from that absorption of mind in higher things which ought to be my privilege in order not to tumble off.” And again: “It appears to me incredible, but it is true, that in a great number of churches communicants are made to kneel on a lower level than the person who is to administer the cup to them. And a high rail is intruded. The result is that at the most solemn moment, when you want them to be thinking about nothing except the spiritual meaning of the act they are engaged upon, and when you yourself want to be able to perform what is an exceedingly solemn act, with a totally free and disengaged mind, you are entirely occupied in trying to insert the cup in between a lofty rail—very likely with spikes of some kind—and under the rim of a large hat, and it is a tormenting process.” The primary necessity, Dr. Gore explained, was that they should put the people, if possible, to kneel a little higher than the space which was within the rail. At least the communicants



should kneel on the same level and the rail should be so low as not to be an obstacle. Having admitted that there had been great improvements in the arrangement of pulpits since the time when the rostrum was furnished with a cushion, and the glare of the gas jets, one on either side, hid the congregation from the preacher, the Bishop spoke of the place and function of windows in churches. English churches they wanted light, and they wanted a complete reconsideration of what was to be expected of stained glass windows. These should not obscure the light and make the place dark; they should colour the light while they admitted it. In a vast number of cases they defeated the object of a window, especially in such a climate as ours, and having regard to the need of the church. Passing to another matter, Dr. Gore, as one who had frequently to take his place in the sanctuary of a church, complained that a marble floor was a chilly thing to stand on, in our climate. He asked architects to consider whether such a material was not quite unsuitable as a paving in this country. Of course in Italy and Spain, with their great wealth of light, a marble surface was a delightful thing.

Another problem the speaker asked his audience to solve was how to make the seating in a church fill the minimum space so as to let the congregation be as numerous as possible, and at the same time to make it reasonably possible to sit and kneel without distortion. At Westminster Abbey, for instance, sitting was rather painful, but kneeling was a process of physical gymnastics which could be accomplished only by the most agile. The Bishop went on to contrast the monastic ideal which lingered on in the construction of churches, as when the choir was screened off or hedged in, with the ideal represented in the earliest Christian churches, when the whole congregation, and not the choir or any one part of it, was the consecrated body. It was the earlier, the congregational ideal, he said, they ought to try and build for. Looking at a modern church, one might ask: "I wonder why these boys and choir men are selected for this extraordinary seclusion.

I never heard that they are particularly holy or anything of that kind." There was a good deal to be said for the choir being in the middle of the church; from the point of view of their leading the congregation there was very little to be said for their being shut up behind screens in a narrow choir.

Bishop Gore protested against the way in which the font was relegated to "a muggy little corner," in the dim obscurity of which, after stumbling over a good many hassocks, one might discern it. Finally, speaking of church decorations, he expressed the view that it would be an advantage if much of the brass-work inserted in recent times were utterly cast out. It had been such as it was very difficult to find language adequately to describe. There should be attached to every church its architect's design for its gradual beautification or decoration, and he would attach as a sort of bribe, that it should be unnecessary to obtain a faculty when the decoration was in accordance with the architect's design. If that principle were once established they would get rid of what was at present a grave disaster, namely, that every individual who wished to put up a memorial "goes off to an architect or designer and gets the thing drawn out; then comes with it and says, 'I want to put this up,' and considers himself aggrieved or offended in his tenderest susceptibilities unless he is allowed to put it up." Unless the churches were going to be ugly, monstrous, and offensive in their decoration, they must put an end to that kind of arbitrary treatment of them.

OUR PLATE.

Mr. Henry T. Hare's design for the Islington Central Library, which forms the subject of our centre plate this week, was awarded the first premium by the assessor, Mr. John Belcher, R.A., in the competition held in 1905. The site is at the junction of Holloway Road and Fieldway, the back part extending about roof, along the rear of the houses facing the former road. The entrance is placed in

Holloway Road, next to the adjoining property, and a corridor 12ft. wide leads to the principal rooms and to the staircase. The building is faced with Portland stone, and the floors are fireproof throughout. Heating is by low-pressure hot water, and the joinery and fittings are of wainscot. The library is conducted on the "open access" system, with attendants' enclosure and radiating cases.

BUILDERS' FOREMEN AND CLERKS OF WORKS' DINNER.

The twenty-sixth annual dinner of the Provident Institution of Builders' Foremen and Clerks of Works was held at the King's Hall, Holborn Restaurant, on Saturday last, February 25th. At the conclusion of the dinner, the usual loyal toast having been honoured,

The Chairman (Mr. Thos. Holloway) proposing the toast of "The Institution," said, with respect to the building trade, there were some buildings they hurried through as quickly as possible, and others over which they delighted to linger, and having mentioned, in the course of some further remarks, that his birthday coincided, at a later date, with that of Sir Christopher Wren, the speaker urged non-members to join the Institution. Subscriptions were from 5s. upwards.

Mr. John Beer, corresponding secretary, responding, said there were about 800 builders in London; and if each would contribute £1 the Institution would be relieved of all financial anxiety.

Mr. Fredk. Higgs then proposed the toast, "The Architects and Surveyors," to which Mr. J. J. Joass (for the architects) and Mr. H. Northcroft (for the surveyors) ably responded.

Mr. H. D. Blake proposed the toast, "The Builders and Contractors," to which Mr. Leonard Horner, replying, expressed his satisfaction that the depression which had so long overhung the building trade showed signs of passing away. He concluded with a sympathetic reference to the late Mr. Howard Colls.

Mr. Alexander Ritchie, proposing the toast, "The Governor, Trustees, Donors, Subscribers, and Visitors," alluded to his early friendship with the brothers Holloway, and to the important position which they held in the building trade. The late Mr. Howard Colls, said the speaker, was a giant among builders and among men.

Mr. Ben Carter responded to the toast.

Mr. Ernest Searchfield (Financial Secretary) then announced that the evening's donations towards the Institution's funds amounted to £463 2s., a record collection. The total included a gift of £26 5s. from Messrs. Holloway Bros., and a like sum from Mr. Thos. Holloway as a personal contribution. No fewer than 655 diners, continued the speaker, had been accommodated that evening. He apologised for any inconvenience that might have been experienced; but it was almost inevitable with such a large company.

Mr. T. N. Yule, proposing the toast, "The Chairman," observed that it was the second time on which the chair had been filled by a member of the Holloway family, Mr. Henry Holloway being the former chairman. Everybody knew the Chairman for a modest and unassuming man.

Mr. Thos. Holloway, in the course of a brief response, expressed his very great pleasure in fulfilling the various duties of office.

CORRESPONDENCE.

Architect, Builder, and Specialist.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Master builders and building contractors must have read with very deep interest the speech of Mr. Macfarlane at Manchester, reported in your issue of February 22nd under the heading "The Architect, the Builder, and the Specialist."

The three branches named, to-day carry the trade upon their shoulders. The art and industry of building should be limited to the two great branches represented by the architect and the builder. The specialist is the outcome of the architect's, no less than the builder's, not being up-to-date: cause and effect in that respect are too often confused. As a "man in the street," who is neither an architect nor a builder, but yet loves design and appreciates good building, the writer was tempted, in speaking to the question of a fair form of contract at the last meeting of the National Federation of Building Trades Employers, to draw attention to the great necessity for education among those whose interests and existence were so largely dependent upon being up-to-date. It is the want of education on the part of those interested which heralds the advent of the specialist, and even calls for it; and while architects and master builders no doubt continue to advance the professional and commercial side of their profession or art too often independently, instead of advancing hand in hand, the specialist strides on ahead, and leaves both those branches behind, and in many cases obviates the necessity for the services of either. A due appreciation of the amenities of the trade by the architect and builder does to some extent hold the specialist in check, but these two branches have still to contend with that modern fetish, the pursuit of cheapness, a mistake into which the younger generation are too ready to plunge, in the belief that if it does not lead to lasting greatness, it pays. Experience teaches otherwise. My object in dotting Mr. Macfarlane's "i's" and crossing his "t's" is to endeavour to supplement the efforts of so many others who have been and are so hard at work

in seeking to bring home to members of the trade the necessity of familiarising themselves with the immediate demands of the day upon their trade. It is imperative for the master builder to take his due share in civic administration and social life, to attend conferences of persons interested in improving housing conditions—who are heralds of events though dubbed as cranks—and if need be, steal from them Jove's thunder; to see that the younger generation, who are often themselves the sons of professional men and builders, are imbued with "right" ideas at the outset, and that they enter upon their calling thoroughly educated and up-to-date.

Unfortunately, the retired butcher, baker, grocer, and tailor, for many years have too often launched out into speculative building without any qualifications or fitness, and have thereby brought house building on the so-much-per-foot-run basis into disrepute; but is not the architect (who advises the estate owner) with his so-many-to-the-acre-repeat plans equally to blame for fostering conditions which permit such excrescences of the trade?

What am I driving at? The question may well be hurled at me by the practical and hard-headed master builder. My answer is short. Educate! Educate!! Educate!!! Among other things, as a lawyer, may I say, learn to read a form of contract, even upside down, if not to interpret it legally.

W. H. HOPE,
Secretary Northern Counties Federation of Building Trade Employers.

The Board of Trade London Traffic Report.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR, — With reference to the leading article in your issue of February 22nd, under the above caption, and more especially to the quotation from the report on page 189: "the open ground to the south of Wormwood Scrubs, now occupied by Exhibition buildings, comes nearer to the city than any other vacant space within the County of London, and presents an opportunity for forming a good western outlet which should on no account be lost,"

I venture to point out that, pending the construction of the proposed Western Avenue, great relief could be given at small cost by extending Ducane Road about a quarter of a mile across open fields to Old Oak Lane, as indicated on the accompanying sketch map. This extension would enable motorists, cyclists, and others to avoid the crowded and tram-ridden Uxbridge and Harrow Roads in their most congested parts, and give a clear and quiet road through to Ealing Common free of tram lines.

A. L. G.

Perspective Drawing.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I read with much interest the review of Mr. Storey's book on perspective, in your issue of Feb. 1st, and now that the subject is under discussion I should like to allude to a side of the matter which seems to me to be of some importance: I mean the usual method of drawing a bird's-eye view—viz., by keeping the eye-line above the picture. Although the usual practice, it is surely not one to be commended.

In the first place, the picture is so foreshortened as to detract considerably from its value. The direction of the visual ray, too, is perfectly horizontal, but the effect conveyed is that of a downward direction. Apparently the excuse is that the picture plane is by that means kept perpendicular, and the vertical lines in the picture do not run to vanishing points.

As a matter of fact, it seems very little is generally known about perspectives beyond the usual elementary methods, with a perpendicular picture plane in front of the building, and preferably touching it at one corner: the usual position of the main height line! I have endeavoured to get wider information on perspective, but with scanty success, and I have come to the conclusion that one has to evolve a good deal for one's self. A certain architect who turns out some very effective perspectives, admitted to me that he always did them by eye, and that he doubted whether he could work out a perspective if he tried! I should be very glad if you would kindly treat the subject in your columns when space permits.



A SUGGESTED DEVELOPMENT SCHEME FOR SHEPHERD'S BUSH, LONDON, W.

The enormous advantage of being enabled readily to put into perspective any view, at whatever angle, and free from the limitation of a level axis, is at once apparent, and many instances will immediately occur to one. In roof views the chimneys would require a little care, but for interiors, such as looking down into a hall, or up into a gallery (a worm-eye view), it would be most useful. To get a view looking down a staircase by the ordinary method is of course absolutely impossible. Some interesting and novel perspectives could be obtained by this advanced method, and would certainly be a welcome addition to the stereotyped perspectives one invariably meets with.

Perhaps the most important benefit to be derived would be that it would help one to get into the way of imagining a building from any point of view, and should greatly assist design as regards proportion and effect, and also construction. We are apt to think too much on one level.

A REGULAR READER.

LONDON MASTER BUILDERS' ASSOCIATION ANNUAL DINNER.

The annual dinner of the above Association was held in the Whitehall Rooms of the Hotel Metropole, on Thursday, February 23rd. Among the company were Sir Lawrence Gomme, Mr. Frederick Higgs, Mr. Edwin T. Hall, Mr. F. G. Rice, Mr. William Shepherd, Mr. Robert Cobay, Mr. Arthur Keen, Mr. Ernest J. Brown, and many others.

The loyal toasts having been honoured, Mr. William Shepherd, proposing the toast, "The Professions," referred to the times when the architect and builder were combined in one person. A great deal of criticism, he continued, had been made with regard to the architecture of London streets, and it was debated whether an architect should impress his individuality upon a building, or should simply contribute to a general scheme. The architectural work in Kingsway and the neighbourhood was disappointing owing to the lack of harmony. All the buildings were of merit, but failed to make a whole. The speaker then referred to the diverse subjects with which the architect was supposed to be familiar, and concluded with a brief reference to the profession of surveying.

Mr. Arthur Keen, F.R.I.B.A., responding for the architects, said he had never ceased to admire the skill and judgment of the London builder in overcoming the innumerable difficulties presented by the average London site. He was happy to think that the best possible relations continued to exist between architects and builders. Mr. Keen concluded his speech with a description of the Architectural Association's methods of training the young architect.

Mr. S. Chatfield Clarke, F.S.I., replied for the surveyors, observing that the surveyor's lot, like the policeman's, was "not a happy one." They suffered severely from the practice of advertising for quantities by competition. In America, he was told, they had no time for the quantity surveyor.

Mr. Frederick Higgs then proposed the toast, "The L.C.C. and Municipal Authorities," observing that municipal institutions dated from Roman times; and, in a luminous survey, he proceeded to trace their history up to the formation of the L.C.C.

Sir Lawrence Gomme, in reply, said that the L.C.C. was at that moment utilising

the organisation of the L.M.B.A. for the purpose of guiding future legislation. It had been suggested that the improvement of the West End of London inflicted an injustice upon the East End, but he disagreed. The people of the East End took a pride in walking through the streets of London, and in admiring the big buildings erected.

Mr. F. E. Wallis, J.P., replied appropriately for the municipal authorities.

Mr. Edwin T. Hall, F.R.I.B.A., in proposing the toast "The London Master Builders' Association," referred in feeling terms to the death of Mr Howard Colls. The L.M.B.A., he continued, was founded upon two bed-rock principles—co-operation among themselves, and conciliation towards those they employed. And with the introduction of conciliation, all the old troubles and bitterness of feeling had passed away. Sir Lawrence Gomme would agree, he thought, that an Act, when introduced, could be considerably improved by the criticism of those who had to carry out its provisions. Referring to professional matters, it was outrageous, said Mr. Hall, that the architect should be held responsible for that insidious disease dry-rot, which was comparable to small-pox in a human being. The germ was produced in the forest and was brought in the timber.

Mr. Leonard Horner, responding to the toast, said the Association, in the course of the year, had done an enormous amount of work, and had dealt with a large number of questions affecting the trade. The Association, through its Organisation Committee, had added to its numbers both in ordinary and associate members. With regard to the new land value duties, representations had been made to the Chancellor of the Exchequer setting forth the injuries sustained by the building trade. It was felt that the Act was not intended to penalise this or any other trade; and no doubt if the objections raised were found to prevail, those clauses affected would be speedily removed from the Act. Having referred to the proposed Act of Parliament to provide against unemployment, which he thought would act disastrously upon the whole building industry, the President alluded to the part taken by the Association in the conference with the L.C.C. with respect to the proposed regulations to govern the construction of buildings in reinforced concrete. The apprenticeship question, sub-contracting, the introduction of reinforced concrete (which he recommended builders to master in every detail), were all touched upon in the President's comprehensive review.

Mr. Fred. L. Dove then proposed the toast, "Our Guests," to which Mr. Robert Cobay, Master of the Worshipful Carpenters' Company, replied.

NATIONAL CONFERENCE ON TOWN PLANNING.

The number of representatives appointed to attend the National Conference on Details of Practical Town Planning at Liverpool on Thursday and Friday last so far exceeded expectations that it was found necessary to secure greater accommodation than could be afforded by the School of Civic Design in Liverpool University, and accordingly the sittings were held in the concert room of St. George's Hall. The subjects under discussion were—(1) The actual details of the various steps which should be taken prior to the presentation of a formal application to the Local Government Board for permission to prepare a town-planning scheme; (2) the extent to which a local authority should, under a

town-planning scheme, relax or alter conditions relating to widths of roads and methods of road construction; and (3) the standards as to limitation of the number of houses per acre and the best practical methods of applying these standards in the preparation of town-planning schemes.

Alderman W. Thompson, chairman of the National Housing and Town Planning Council, presided at the conference, which was opened by the Lord Mayor of Liverpool, who was joined by Mr. W. H. Lever in welcoming the representatives. At the conversazione held on Thursday evening, Profs. Reilly and Adshead received the visitors. At the close of the conference, the National Advisory Town Planning Committee was elected for the coming year. On Saturday the representatives visited Southport at the invitation of the Mayor.

COMPETITIONS.

Higher Grade School, Girvan.

The assessor in this limited competition (Mr. H. E. Clifford, of Glasgow), in which nine sets of designs were submitted, has placed first those of Mr. Cowie, of Ayr. The total cost of the scheme is estimated at £6,000.

Church Hall, Kendal.

Architects practising in Kendal are invited to submit competitive designs, together with written descriptions and estimates, for the erection of a church hall. Premiums of £10 and £5 respectively for the designs placed first and second. Particulars from G. F. Braithwaite, Albion Chambers, Kendal.

Church, New Cumnock.

The Deacons' Court of New Cumnock propose to build a church and enlarge the existing hall at a total cost of £3,700, and are inviting architects to submit designs. They claim, however, that every design shall be "the exclusive property of the Court, with full power to use it, or deal otherwise with it, according to the Court's own absolute discretion." The Court, however, if they adopt any of the plans, may "give the author thereof a gratuity of £10 sterling," but "the Court shall be in no way bound to employ him as architect in the matter." "Gratuity" is distinctly good.

"Buffaloes" Orphanage, Aldridge, Staffs.

A meeting of the general committee of the above Institution was held at Nottingham on February 18th, to consider a report from the directors on the plans recently submitted in competition for the enlargement of the Orphanage. Three sets of plans had been selected for final consideration under the noms de plume of "Staffordshire Knot," "Staffs," and "Airy." The first-mentioned design was unanimously adopted, and was found to be the work of Messrs. Jeffries and Shipley, of Walsall. The additional accommodation provides for 55 cots.

STANDARDISATION OF LOADS ON HIGHWAY BRIDGES.

Mr. Henry C. Adams, Assoc. M. Inst. C.E., 60, Queen Victoria Street, E.C., Mr. A. Ernest Prescott, Borough Surveyor, Eastbourne, and Mr. H. C. H. Shenton, 28, Victoria Street, London, S.W., have been nominated by the Council of the Institution of Municipal Engineers to represent that body at the joint conference being called by the Concrete Institute to arrive at a working standard for the loads to be provided for in designing new highway bridges.

COST OF SCHOOL BUILDINGS.

The report of the Departmental Committee (formed on a year ago) on the Cost School Buildings was issued last Wednesday. The members of the Committee were Mr. L. A. Selby-Bigge, principal Assistant Secretary of the Elementary Education Branch of the Board of Education; Mr. N. T. Kershaw, Assistant Secretary to the Local Government Board; and Mr. F. Clay, Architect of the Board of Education. The terms of reference to the Committee were to inquire and report (a) whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present; and, if so, (b) what steps should be taken to facilitate the adoption of such materials or methods, and whether any alteration in the law is required for the purpose.

The Committee first considered what is the expectation of "useful life" for which an architect should allow, and how far it is possible to make the "structural" coincide with the "useful" life. The Committee think that where the population is of a shifting or exceptional character and it is uncertain whether any school or so large a school will be required after a limited period of, say, between 15 and 20 years, something between a permanent and a temporary building is wanted, and the ingenuity of school architects is directed towards finding a satisfactory type of semi-permanent building, cheap to erect, inexpensive to maintain, cool in summer, and warm and dry in winter. During the period immediately following the Education Act of 1870 the usual cost of school building was £5 to £6 per place, but now even economically built schools cost from £10 to £13 10s. per place. This increase is due, in many cases, to conditions not under the direct control of the local education authorities, but the Committee find that local authorities do not all or always practise those reasonable economies which are in their power, or exercise sufficient control or self-restraint in the matter of the style and general character of the buildings. The "ecclesiastical type of school" is happily disappearing, and, in the opinion of the Committee, it was a most unhappy invention from every point of view, and has proved lamentably expensive. Local patriotism, we are told, often confuses modesty and simplicity with meanness, and demands buildings of an expensive character. The Committee have received no evidence indicating that any authority is justified in spending £20 per place.

The possibility of savings in details is discussed at length, and the Committee recommend (1) That local education authorities should be encouraged to submit specific proposals for the use of novel materials or methods for public elementary schools. (2) That it should ordinarily be made a condition of the approval of such proposals that such provision as is practicable should be made for the periodical inspection of the structure. (3) That, for the purpose of facilitating the use of novel methods and materials (a) legislation should be promoted to exempt school buildings the plans of which have been passed by the Board of Education from and operation of local building by-laws and corresponding provisions in local Acts; (b) the Building Regulations of the Board of Education should be revised so as to remove any difficulties placed by

them in the way of the adoption of such methods or materials. (4) That, where proposals are approved for the use of novel methods or materials, such as those described in detail in the body of the report, in the erection of permanent schools, a loan period of 30 years should, until further experience is available as to the durability of such structures and their immunity from repairs, be regarded as normally appropriate to such cases.

We dealt last week with the obvious danger of exaggerating the demand for cheapness, and shall recur to the subject.

IN PARLIAMENT.

(By our Gallery Representative.)

Town Planning Schemes.

In the House of Commons, Mr. Clough asked the President of the Local Government Board whether he would give a list of all the town-planning schemes which had been submitted for his approval since the Act of 1909 came into force, and whether he would state which of them had received his approval and which were at present being carried into effect.

Mr. John Burns supplied the following printed reply—Under Section 54 (2) of The Housing, Town Planning, etc., Act, 1909, it is necessary for a local authority, before preparing a town-planning scheme, to obtain the authority of the Local Government Board for the preparation of the scheme. Application for such authority has been made in three cases, namely:—(1) By the Corporation of Birmingham in regard to an area comprising the parish of Quinton and parts of the parishes of Harbourne, Edgbaston, and Northfield (2,320 acres). (2) By the Corporation of Birmingham in regard to an area comprising part of the parish of Aston (1,477 acres). (3) By the urban district council of Ruislip-Northwood (about 6,000 acres). I have given the necessary authority in respect of the case first mentioned, and the Corporation are now in a position to proceed with the preparation of a scheme to be submitted to the Board for approval. As regards the other two cases, I have caused local inquiries to be held into the applications, and my decision thereon will be given at an early date. I may add, for the information of my honourable friend, that although the three cases above-mentioned are the only cases which have reached the stage of formal application to the Board for approval of the preparation of town-planning schemes, I have information that the question of preparing such schemes is being considered by a number of local authorities, urban and rural, and numerous conferences have taken place with the Board's officers on the subject. I have reason to suppose that in several cases the authorities are taking definite action with a view to the preparation of schemes in the near future."

Carnarvon Slates.

Mr. Hobhouse, Financial Secretary to the Treasury, in reply to Mr. Ellis Davies, who asked whether Carnarvon slate was included among slates that might be used on public works in Ireland, said that it was the practice of the Board of Public Works, Ireland, to indicate the standard of slate they required by mentioning some slate known in the trade as reaching that standard. It was then open to the contractor to propose to use a slate from another quarry, and, provided the Board were satisfied as to the qualities of the slate

proposed to be used, they placed no restrictions on their contractors as to the place from which the supply was obtained.

New Roads in Ireland.

Mr. Hobhouse has supplied to Mr. Hayden the following information regarding the making of main trunk roads in Ireland:—The Road Board have sent to each county council in Ireland a map indicating the roads, both on the coast and inland, towards the improvement of which they consider their first contributions should be made. In selecting from these roads the portions which should be dealt with in the first instance the Board will consider any applications and representations which have been made or may be made to them by the county councils responsible for the improvement and maintenance of the roads in question.

Mr. Hayden wished to know what were the data before the Road Board before they issued their circular of the 9th February addressed to the Irish County Councils that decided them to offer a grant for a motor road for tourists all round the coast of Ireland.

Mr. Hobhouse replied that before the Road Board issued their circular of the 9th February, addressed to Irish county councils, they had before them applications from nearly all the county councils in Ireland. They had also had representations from the Irish County Councils' General Council and the Irish County Surveyors' Association. It was not the intention of the Road Board to administer the Road Improvement Fund in the interests of any one section of the community.

Bolton Post Office.

Mr. Gill asked if Mr. Dudley Ward, representing the First Commissioner of Works, was aware that it was now three years since the erection of the new Post Office for Bolton was promised, and that the present premises were utterly inadequate and whether he would ask Parliament to sanction estimates to proceed with the erection of the new buildings without any further delay.

Mr. Dudley Ward, in reply, said the building programme for post offices was settled in consultation with the Treasury and the Postmaster-General. The scope of this annual programme was limited by the sum which the Chancellor of the Exchequer was prepared to allow for the service, and it had been decided that the case of Bolton, with others, must give way during the next financial year to the even more pressing needs of other places.

Referees under the Finance Act.

Mr. Hobhouse informed Mr. Tyson Wilson that 13 referees under Clause 33 of the Finance Act had already been appointed. Two more were about to be appointed. Of the 13 already appointed, one was a Fellow of the Auctioneers' Institute, and all of them were Fellows of the Surveyors' Institution.

Sea Defence Works at Silloth.

The Council's consulting engineers, Messrs. Henry Adams and Son, of 60, Queen Victoria Street, London, E.C., have reported that the sea wall and concrete apron at Silloth, about 1,400 yards long, carried out under the first contract, has now been satisfactorily completed, and application has been made to the Local Government Board to sanction a loan in connection with the proposed extension for about 1,000 yards, which is to be carried out as soon as possible.

ENQUIRIES ANSWERED.

Cost of Theatres.

T. S. (NORTH) writes:—"Please furnish particulars of the cost of theatres (price per cube and price per seat) of 1st and 2nd class in London and the provinces."

—It is very difficult to give the desired information, as theatre work being a special class of building, the price per foot cube varies considerably, according to mode of construction, decoration, finish, requirements of authorities, etc., but a fair price would be about 1s. 6d. for 1st class and 1s. 3d. for 2nd class.

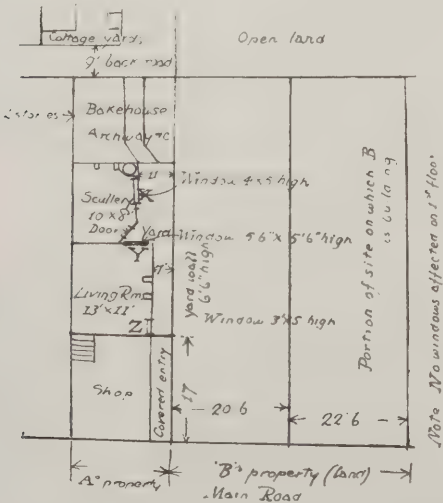
Petrol Gas Lighting System.

S.W. (LEICESTER) writes: "Is a system of petrol gas lighting safe and satisfactory with the tank at the highest point supplying petrol to burners by gravitation, the gas being generated at the burners? Economy of installation and of maintenance is essential."

—Enquirer should consult his fire insurance company and see if they will accept the system as an ordinary risk; the luminosity is satisfactory, but petrol inside a house is not desirable.

Right of Light Question.

J. H. W. (BURSLEM) writes: "B buys a plot of land and wishes to erect shop premises thereon close to A's property, built some 25 or 30 years (with the exception of bakehouse, etc.). A's gable is only 17 ft. deep; B would undoubtedly diminish the light to A's windows, but had A not built the bakehouse some 10 years ago he would still have had ample light notwithstanding B's building close to his property. The crux of the question is: Supposing A had not built the bakehouse, and shut himself in, as it were (when the adjoining land was built on) and would have had sufficient light from his chief windows when the proposed B's property was erected, can A now claim from B if he built close up and took away light, now valuable, but not so if the bakehouse had not been built? It appears to me somewhat oppressive that B should suffer because A had blocked his site up at the rear with a two-storey building in recent years. Window Z is a subsidiary light, and the main one for lighting (Y) must have been more than ample for lighting purposes. Again, the lateral light to window X, together with the little interference which might have been caused by B's back buildings, would have been ample if the bakehouse had not been put up."



—The enquirer does not state whether A's property is situated in a district where by-laws are in force; if so, A has without doubt built his bakehouse improperly, and has not left a sufficiency of air-space, "within the same curtilage," to comply with those by-laws. However this may be, I fear that the past laxity of the local sanitary authority does not at all affect the question of light and air as between A and B, and I am of opinion that B must accept the existing circumstances, and respect all the lights in A's property which are 20 years of age. The theory set forth in the enquiry is both interesting and ingenious, but I am afraid it would avail but little in a Court of Law.

If it should have happened that both properties originally formed part of a large estate, and were purchased subject to "Building Regulations," it is just possible that the "Conditions of Sale" of the original property may assist B, but from a public point of view it certainly appears to be undesirable that the land should be so closely built up as appears customary in this neighbourhood. F.S.I.

System of Filing.

In reply to the enquiry which appeared under the above heading in our last week's issue, a correspondent (J.E.B. Sherborne) writes as follows: "I had the same need as your correspondents W.J. and W., and had a case made which I have found most useful for keeping unrolled drawings and maps unrolled. The case is a box of 1 in. pine, with 1/2-in. back, of a convenient length and depth to back to take the largest size drawings, and of the height to take, say, 8 or more trays. The ends of the case are grooved, barely 3/8-in. deep, and of the width to take framed slides of 1-in. pine, out of 2-in. x 1-in., with a middle cross-piece. This is covered with mill-board. These are light and easily drawn forward to take out any drawing required. I have a 2-in. open space between slide and slide, which gives room for a good number of sheets. The slides can be numbered or lettered to correspond with a number or letter on the drawings. The whole is enclosed in front with an American cloth curtain tacked on the top, and with a light roller on the bottom to keep out dust. This is readily folded back on top of the cases when sheets are wanted."

Flow of Oil in Pipes.

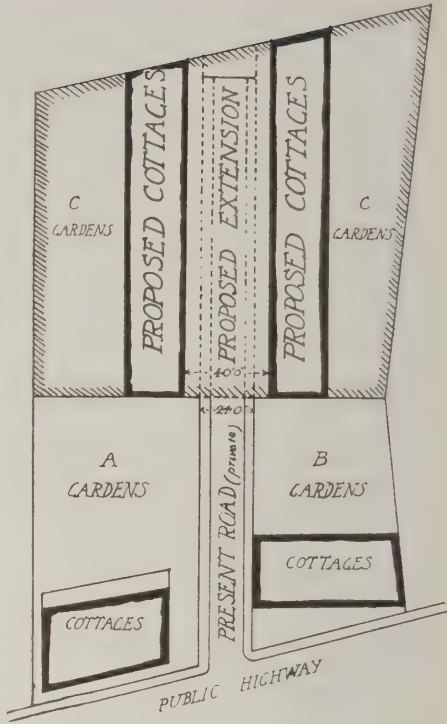
W. G. W. (DOVER) writes:—"Please state a formula for determining the flow of oil in pipes, and also one to ascertain the pressure in lbs. per square inch on the pipes."

—I do not know of any formulæ specially applicable to the flow of oil. In the absence of any precise information, it would probably be sufficient to calculate as for water, but allowing 25 per cent. additional head to overcome viscosity. Box's "Practical Hydraulics" (Spon; 5s. net) will give all formulæ for friction, losses at bends, branches, etc.

HENRY ADAMS.

New Road and a By-law.

"BUILDERS," (LANCASHIRE) write:—"We shall be glad of your opinion in the following case: C is the owner of the land shown hatched on the enclosed plan; the front portion being owned by A and B. C is desirous of erecting workmen's dwellings on his land, and proposes to extend the present road, placing gates across on his boundary line, and building on each side. The Council's surveyor contends that this extension constitutes a new street, which,



being over 100 ft. in length, must be constructed as a carriage way in accordance with their by-laws, which require a width of 36 ft., notwithstanding the fact that the present road, of which it forms a part, is only 24 ft., and cannot be widened."

—The Council's surveyor is quite right, and unless C can make another entrance to his proposed new street of the full width of 36 ft. he cannot comply with the by-laws either with regard to his new street or with regard to the cottages he proposes to build. Were the present 24 ft. road a public highway repaired by the local sanitary authority, and not merely a private right of way, the position would be quite different, and C might then lay out his new street as he suggests. F.S.I.

Registration of Architects.

"ASSISTANT" (NEWCASTLE-ON-TYNE) writes:—"In the event of registration becoming established within, say, a year or two, what would be the position of an assistant (age about 26, with ten or eleven years' experience) with regard thereto? Would the fact of his being an Associate of one of the R.I.B.A. allied societies have any bearing on the question?"

—The Bill drafted and promoted by the Society of Architects provides that any person who at the date of the passing of the Act is a member of the Royal Institute of British Architects, the Society of Architects, or a professional member of certain other architectural societies scheduled in the Bill, shall in respect of such membership be entitled to be registered under the Act on payment of the registration fee, and that any person who can prove to the satisfaction of the Council that he was practising architecture in the United Kingdom prior to the first day of January, 1909, and is still so practising, or has served as apprentice, assistant, or practitioner for seven years in the aggregate after having attained the age of fifteen years, prior to the passing of the Act, shall, on payment of the registration fee, be entitled to register on making the required declaration.

It will be seen from this that, so far as the Society of Architects' Bill is concerned, "Assistant" and those in a similar position would be protected. B.

CONCRETE AND STEEL SECTION

(MONTHLY.)

Evils of Competition.

The reinforced concrete industry cannot expect exemption from all the evils of competition, although it may very reasonably remonstrate against the intrusion of conditions that, while they are too often and too easily tolerated in other directions, must be, as a mere matter of common-sense precaution, sternly discountenanced by the designer in reinforced concrete. Mr. R. W. Vawdrey, in a paper read recently before the Concrete Institute, drew attention to some of these evils. In the first place, the concrete specialist, like a good many other victims of the tendering system, is expected to do a great deal of work for nothing. He, like the general contractor, is often set to work on the elaboration of estimates which he knows have but one chance in twenty, perhaps, of being accepted; and it is not particularly consoling to him to know that nearly a score of other experts are simultaneously figuring fruitlessly on the same job. It is a shocking waste of effort, and the federated master builders are considering how best they may oppose the wasteful system of tendering without quantities. Of course the reinforced concrete specialist is in a somewhat different position. He must perforce do a great deal of independent calculation; and, under present conditions, he is expected to do it without fee or reward in case his tender is unsuccessful. This is manifestly unfair, whether we regard the result as a dead loss to the specialist, or as a sort of "carry-over" to the next successful tender. In either case it is an unfair transference of obligation to bear an expense that is uneconomically created and is therefore irksome and abhorrent, but is apparently, at the present stage of progress, unavoidable.

Waste of Effort.

What, however, can and should be resisted is the increasing tendency on the part of clients to assume that the specialist must himself obtain at his own expense all the data as to site, foundations, etc., which obviously ought to be supplied to him by the architect or engineer in charge of the work. This would not matter very much if the specialist were sure of getting the work; but when he is tendering competitively, and when perhaps a score of other specialists are required to go to the same trouble, the iniquity is multiplied to nauseation, and, following the example of the federated general builders, the concrete specialists should cast about for some effectual method of dealing with the evil.

Competitive Designs.

Another evil which is creeping in is that of inviting competitive designs for reinforced concrete structures. As the matter of competitive quantities follows the false analogy of the general building trade, so that of inviting competitive designs is a kind of perversion of custom with respect to architects, who, as a rule, as Mr. Vawdrey observes, are only expected to compete for large and important public buildings; whereas the designer in reinforced concrete is evidently faced with a rather irritating and undesirable extension of this

practice, which, in the case of a private owner, obviously offers none of the compensating advantages of recognised architectural competitions. Mr. Vawdrey suggests that only one firm should be asked to prepare, as a basis for tendering, preliminary designs and an estimate of cost, on the understanding that, these preliminaries being approved, the same firm should be employed to prepare, for a definite stated fee, complete working drawings, from which the work may be executed by the successful tenderer in the ensuing competition. It is further suggested that, where competitive designs are invited, the more meritorious of the unsuccessful designs should be premiated, as is the custom in architectural competitions.

Specialists in Design.

The proposal to have preliminary designs and working drawings prepared on commission is at first sight admirable. But, when it is more closely examined, rather serious objections to it may be confidently anticipated. Would the selected firm be allowed to compete for the work? If not, would it be worth the while of specialists to undertake to get out designs, estimates, and working drawings? In course of time, when the details and formulæ of reinforced concrete construction became completely standardised, it might be possible to specialise in the preparation of such schemes as those suggested; but, failing the creation of a special class of designers and estimators, who would not expect to execute the work, it might be difficult to persuade the ordinary contracting specialists that the mere preparation of designs and estimates is sufficiently remunerative; also difficulties might arise from the natural preference of the firm executing the work to prepare their own working drawings. If, again, the firm commissioned to get out the designs and estimates were allowed to compete for the work, they would apparently enjoy an immense advantage in knowing very much more about the job than could be known by the other competitors.

Reckless Tendering.

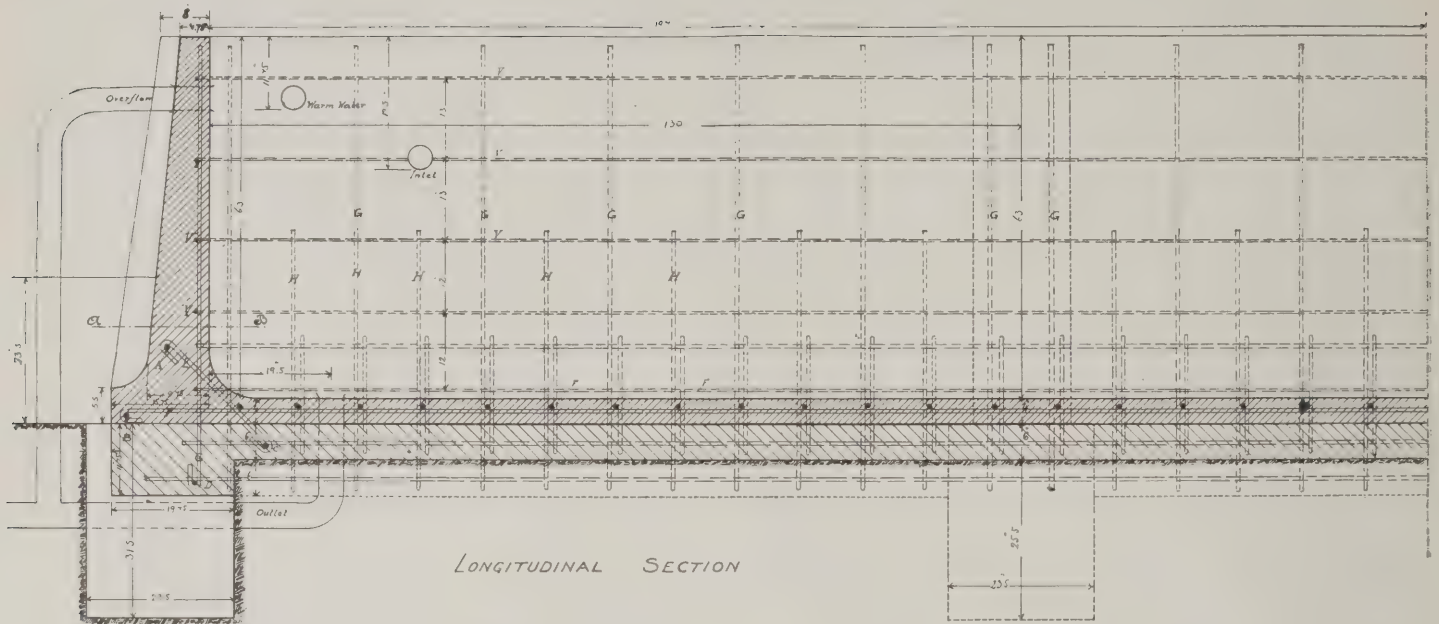
This very knowledge, however, might in some instances cause them to make their tender higher than that of a firm having less familiarity with the details than that which arises from the minute knowledge acquired in preparing them. In that case, the winning tender might be lower than would be consistent either with fair profits or with that high standard of construction which we all desire to maintain, and from which, indeed, it is in the highest degree imprudent to depart. It should not be possible to say, as Mr. Vawdrey does, "that the condition of the industry at the present time was very far from being such that the best work in design was the most successful, or the most remunerative"; but it is to be feared that, for the reasons we have given, the suggestion for improvement would only result in aggravating the mischief. Nevertheless, Mr. Vawdrey did well to call attention to the growth of the evil, and to protest as vigorously as he did against any tendency "to put a premium on slovenly or reckless

work as compared with conscientious, careful, and well-thought-out designing." It is a tendency that must be firmly resisted and checked in every instance, in the interests not only of the profession, but of the client and of the system of construction. In any form of construction, mere cheapness is always bought too dear; in reinforced concrete construction it becomes, so to speak, reckless prodigality. This, however, is a point on which urgent insistency might only too easily be misconstrued. Yet there can be no question that we must be absolutely frank about it; although a certain amount of tact may be required in coupling the assurance that, given reasonable conditions, reinforced concrete construction is absolutely safe, with the somewhat disquieting reminder to a timorous and parsimonious public that the system is one to which the application of niggardly methods is fraught with particular peril.

Discoloration in surface of concrete work

Concrete Work. generally disappears upon weathering.

It has no deleterious influence, and if required to be removed it can be rubbed off with a wire brush and water, or painted with a liquid mixture of cement and water. It is, nevertheless, exceedingly annoying, as it temporarily renders the building unsightly, and often gives rise to groundless alarm on the part of the client, and thus is apt to create an unfair initial prejudice which is apt to last longer than the cause thereof. The following observations may be useful as tending to prevent or allay such misgivings. An efflorescence in concrete work is sometimes due to the soluble portions of the cement coming to the surface during the drying of the concrete, and a good proportion of soluble constituents is generally looked upon as an indication of good hardening qualities in both cements and aggregates. The leaching out of certain lime compounds in both cements and aggregates and their disposition on the surfaces of concrete works are frequently the cause of the varying colour of such surfaces. This discolouration is generally found to be primarily due to variations in the amount of water in the mortar of which the cement is composed. It will be readily understood that where any excess of water is used, segregation of the coarse and fine particles will take place with a resulting difference in colour. The amount of water in a concrete, the face of which is to be exposed, should be neither too small nor too large, but such a concrete should certainly not be dry, or the exposed face will be honey-combed. Where the greatest care is used as to the amount of water added to the mortar, and to prevent its loss, and where the separation of the mortar from the broken stone is carefully avoided in depositing the concrete and in ramming it, the exposed surface after the removal of the moulds is fairly uniform in colour. A more uniform colour will always be obtained where some puzzolanic material is ground with the cement, such as slag or trass. Exactitude in the amount of water used in the concrete, and the addition of some substance containing silica in an active form, are the two steps to be taken to produce a concrete surface of uniform colour.



A REINFORCED CONCRETE TANK. BY FREDK. RINGS.

REINFORCED CONCRETE CISTERNS
AND TANKS.

One of the most remarkable characteristics of reinforced concrete is its wide range of service—its ready adaptability to very varied requirements. Cisterns and tanks of every description are peculiarly adapted to construction in reinforced concrete; and whenever sand and gravel are found on or near the site, the work can be carried out cheaply and rapidly. For the purpose of waterproofing, it is customary to plaster the internal surfaces with a rich cement mortar mixed 1 to 1, or a thin layer of asphalt may be sandwiched in the concrete. A coating of tar, or some similar substance, is often used, but this requires renewing from time to time. If the tank is sunk, an asphalt coating is used externally to separate the structure from the ground. The bottom slab is frequently made of ordinary concrete, reinforcement being introduced where the foundations are bad or at all doubtful. Tanks for the storage of acids are coated with a mixture of glycerine and red lead, or any of the many patent compositions on the market. Another good finish for such a tank is a lining of closely fitted glass slabs. With respect to shape, circular tanks are more reliable than square ones; the latter are liable to become defective at the corners, and heavy reinforcements, to prevent bending or the bulging out of side walling, become necessary. The accompanying drawings show a design for a tank of this latter type. The additional amount of materials required necessarily adds to the cost. As the stresses increase toward the bottom of the tank, it becomes imperative to build in extra reinforcements for the lower portions of the sides, or, by equal distances, to increase the sectional area of the rods. Vertical rods are principally employed in order to keep the main rods in proper positions during concreting. The walling is made, as a rule, 4 inches thick at the top, increasing to 5 or 6 inches at the bottom. In the case of large areas, expansion joints must be provided. Particular attention, as in all reinforced concrete work, must be given to workmanship, and special care taken that the concrete has a uniform density, and that the various batches, as used, have a uniform quantity of water, so as to ensure setting and even drying-out.

LONG-SPAN CONCRETE ROOF
ARCHES.

The Garnisonskirche, at Ulm, Germany, is a large church in which the structural members are built of concrete, the most striking feature being the roof arches, which enabled the body of the church, 73.8 ft. wide and 111.5 ft. long in the clear, to be built without the use of obstructing columns. The structure is carried on concrete piles about 30 ft. long placed in groups under the skewback piers and under the main foundations at the ends. The arches might be described as curved beams, the curve above the apparent springing line being quite flat. They were, however, designed as arches with a span of 89.5 ft. between centres of skewbacks. The arch ribs are 24.6 ft. apart on centres, rise 59 ft. from skewbacks to the centre point at the crown, are 1 ft. $7\frac{1}{2}$ in. wide, $6\frac{1}{4}$ ft. deep at the crown and $14\frac{3}{4}$ ft. deep at the skewback. The ribs are pierced by openings for the side aisles just above the skewbacks. Between the ribs are concrete beams for carrying the masonry curtain walls. The ceiling is a concrete beam and slab system supported by the arches; and since both arches and beams are exposed, the arches were built to curves designed for pleasing effect, and the bottoms of arches and beams were treated with embedded tiles.

The horizontal thrust is taken by means of ties composed of pairs of steel channels anchored in the skewbacks by means of angles riveted to them. The roof is carried by steel trusses, investigation showing that such construction would be more satisfactory than the designs in reinforced concrete. In order to carry these trusses flat beds were moulded on the haunches of the arches, and since these beds were practically over the skewbacks the arch loading comes almost entirely from the weight of the arches themselves and the ceiling. One end of the steel trusses is fixed and the other carried on rollers. The arches were figured for dead load alone, and dead load plus wind load on each side separately. The maximum stress allowed in the concrete was 568 lb. per square inch, both in arches and in beams and girders, and 14,220 lb. per square inch in the steel. The building was detailed and built by the Dyckerhoff and Widmann Company, of Karlsruhe.

REINFORCED CONCRETE SLABS.

A separate-unit type of reinforced concrete wall construction has been used in building the power house of a small hydro-electric plant at Newton Falls, Ohio. The pilasters are of monolithic concrete, while the walls between them are hollow and are built of inside and outside thin concrete slabs, which were set before the pilasters were poured, so as to be keyed into them. The slabs were reinforced with No. 28 gauge expanded metal, and were made in sizes that could be handled conveniently. Their outer surfaces were corrugated by laying $\frac{5}{8}$ -in. round rods in parallel lines on the surface of the fresh concrete when the slabs were cast, and pulling them out after the mixture had taken its initial set. These corrugations were designed to give a good bonding surface for the plaster coat which was applied to the walls after they had been erected. The slabs were allowed to cure, and were then placed on edge in proper position. Vertical form boards were placed for the pilasters, extending beyond the surface for the monolithic work, so that the slabs rested against them. The inside faces of the pilasters were moulded against form-boards placed in the air space between the wall slabs, and were wired to the outside forms after the pilaster reinforcement had been placed. The inside boards also acted as spacers to keep the slabs the proper distance apart. This distance varied somewhat, but 8 in. was the minimum. It is possible that this and similar systems may suggest themselves as being applicable to the new ideas on school construction.

Reinforced Concrete in Hydraulic Works.

The Permanent International Association of Navigation Congresses, which will hold its twelfth meeting at Philadelphia, in the spring of 1912, has appointed Mr. R. W. Vawdrey, B.A., A.M.Inst.C.E., to prepare a report upon the work which has recently been carried out in the United Kingdom in reinforced concrete as applied to hydraulic works. Communications on this subject from engineers who have used this form of construction in this direction should be sent to Mr. Vawdrey, Queen Anne's Chambers, Westminster, who will be glad to incorporate these particulars in his report.

COMPETITIVE DESIGNS AND TENDERS.

BY R. W. VAWDREY, B.A., A.M.Inst.C.E., M.C.I.

The following is an abstract of a paper under the above title which was read by Mr. R. W. Vawdrey at the fourteenth ordinary general meeting of the Concrete Institute, held on February 2nd, 1911, at 8 p.m., at Denison House, 296, Vauxhall Bridge Road, Westminster, Mr. Alexander Ross, M.Inst.C.E. (vice-president) in the chair.

It was, said the author, continually being forced upon the notice of all those engaged in designing in reinforced concrete that the conditions of the industry at the present time were very far from being such that the best work in design was the most successful or the most remunerative; in fact, he went so far as to say that a very considerable premium was placed on slovenly or reckless work as compared with conscientious, careful,

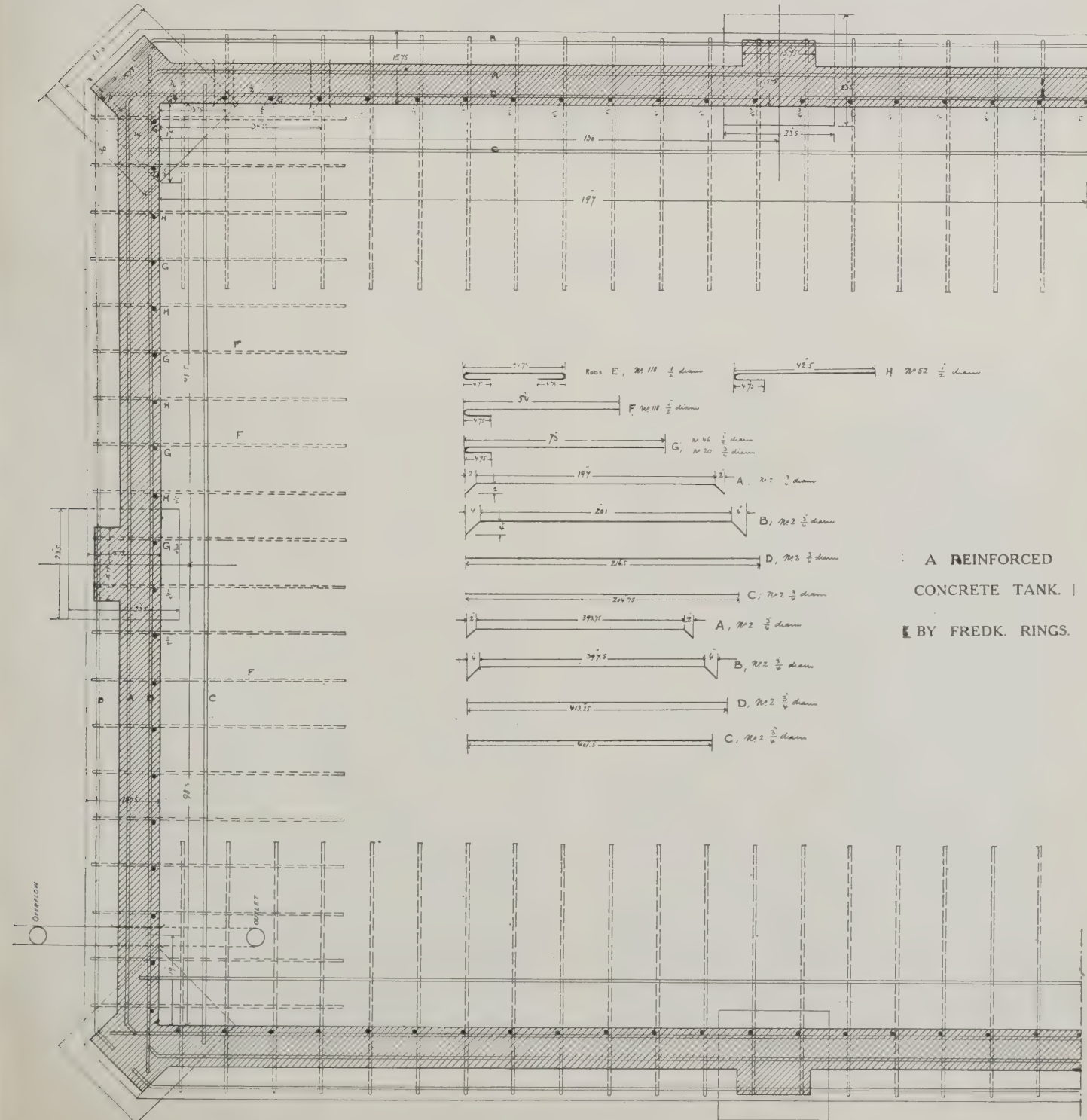
and well-thought-out designing. He proposed, therefore, to deal with the subject in the following order:—(1) the description of the existing conditions; (2) the causes which have led up to them; (3) what he believed to be the remedy.

He commenced by giving a few typical examples of what he considered unsatisfactory competition. From these it was seen that the specialist had usually to undertake the following work free of charge, and, moreover, to do it at the same time that a large number of his competitors were doing exactly the same thing. (1) To prepare preliminary designs for the structure in accordance with the general conditions required by the engineer or architect in charge of the work. This often necessitated the specialist's obtaining information as to the site, nature of foundations, etc., at his own expense. (2) To prepare lists of quantities upon which contractors can tender, and to be financially responsible for the accuracy of these quantities, i.e., be pre-

pared to pay the value of any omissions which may occur. He had also to accept financial responsibility for the stability of the structure.

To the first of these items in itself there was, of course, no objection, as it is the work for which a specialist exists, though all the necessary information as to the site, etc., ought clearly to be supplied by the engineer or architect. The grievance lay in the fact that the specialist should be asked to do it for nothing, and at the same time that a large number of his competitors were doing the same thing. Given certain conditions, any number of equally competent and experienced designers would generally arrive at more or less the same result. The design, therefore, frequently gained very little by such competition, while the designers lost a great deal.

The second requirement, however—i.e., the preparation and guaranteeing of quantities at a preliminary stage of the work—was most objectionable, and was



No doubt there might be many ways of obtaining the desired results, but the procedure which the author advocated was as follows:—When it was decided that a particular structure should be carried out in reinforced concrete, in all ordinary cases one reliable specialist firm, and one only, should be asked to prepare preliminary designs and an estimate of cost, on the understanding that if that appeared satisfactory that firm should be employed to prepare complete working drawings for a definite fee, previously arranged, just



Discussion ensued, in which the following took part:—Mr. C. F. Marsh, M.Inst.C.E., Mr. G. C. Workman, Mr. C. H. Colson, M.Inst.C.E., Mr. G. Corderoy, F.S.I., Mr. W. A. Haskins, Mr. L. Serrailier, Mr. T. B. Shore, Mr. E. F. Etchells, Mr. E. P. Wells, J.P., and Mr. Alexander Ross, M.Inst.C.E.

REINFORCED CONCRETE
BATH POND FOR JARROW
CORPORATION.

The adoption and satisfactory completion of the reinforced concrete swimming pond at Jarrow adds yet another example of this type of construction to the already long list of such structures. The work under notice was carried out for the Borough Council of Jarrow from the designs of Mr. J. H. Morton, F.R.I.B.A., of Newcastle-on-Tyne and South Shields, on a loan sanctioned by the Local Government Board. The pond, which is of the open subway type is 75 ft. long by 28 ft. 6 in. wide, and varies in depth from 4 ft. 9 in. at the shallow end to 8 ft. 3 in. at about 10 ft. from the deep end, and the subway extends all round the pond. The construction is substantially similar to the pond in the public baths at South Shields, which was built to the designs of the same architect.

As will be seen from the detailed drawing, the floor around the bath is constructed in the form of a gallery; it is generally 4 in. in thickness, reinforced with No. 8 3-in diamond mesh expanded steel, and is carried on beams reinforced with expanded steel bars—the beams being continued down behind the pond walls to act as buttresses.

The pond walls are 8 in. in thickness, reinforced with No. 6 3-in. diamond mesh expanded steel. Owing to the soft nature of the ground, the bottom was made 12 in. thick, reinforced with expanded steel.

The inside of the pond is lined with bitumen sheeting, and interlocking glazed bricks.

The details of the reinforced concrete construction were prepared by the Expanded Metal Co., Ltd., of West-

minster, who also carried out the work through the general contractors for the buildings, Messrs. Stephen Sherriff and Sons, of South Shields.

It is interesting to note that the Expanded Metal Company, Limited, have

carried out a considerable number of swimming ponds on their system; for example, two ponds at Chelsea, two at Hammersmith, one at Shotley Point for H.M. Admiralty, three at Salford, and one at South Shields.



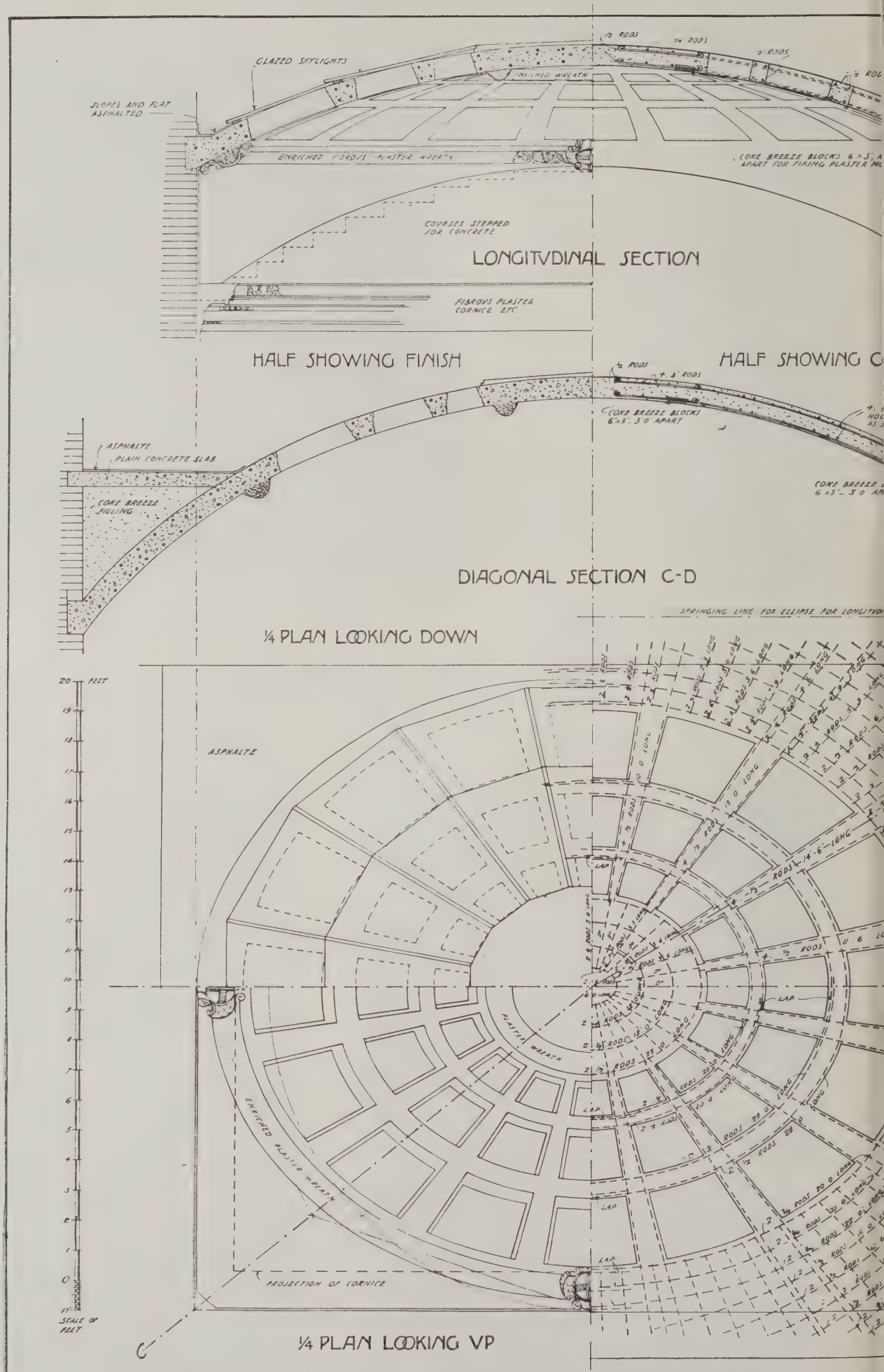
PUBLIC BATHS, JARROW: VIEW SHOWING CONSTRUCTION OF SWIMMING POND WITH EXPANDED METAL.



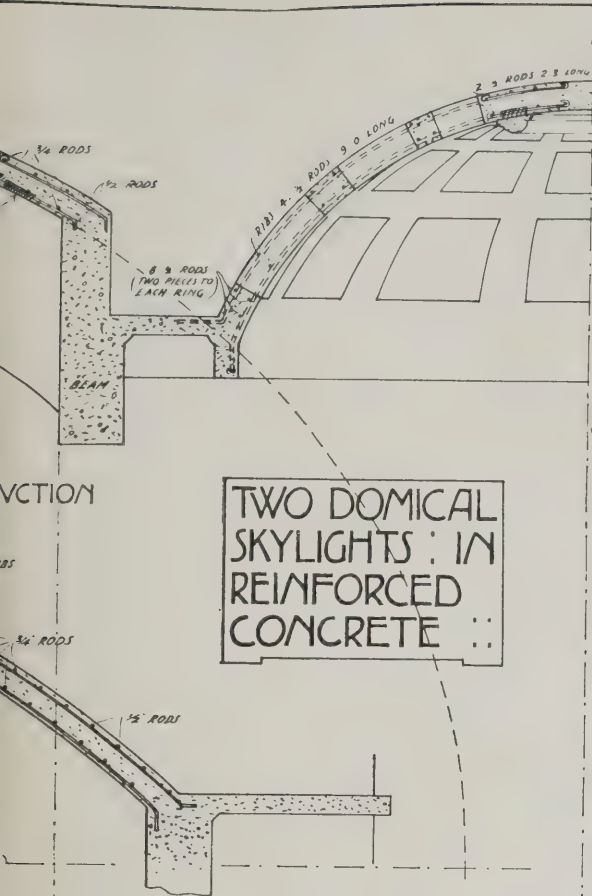
View of swimming pond in course of construction (showing glazed bricks laid over bitumen).



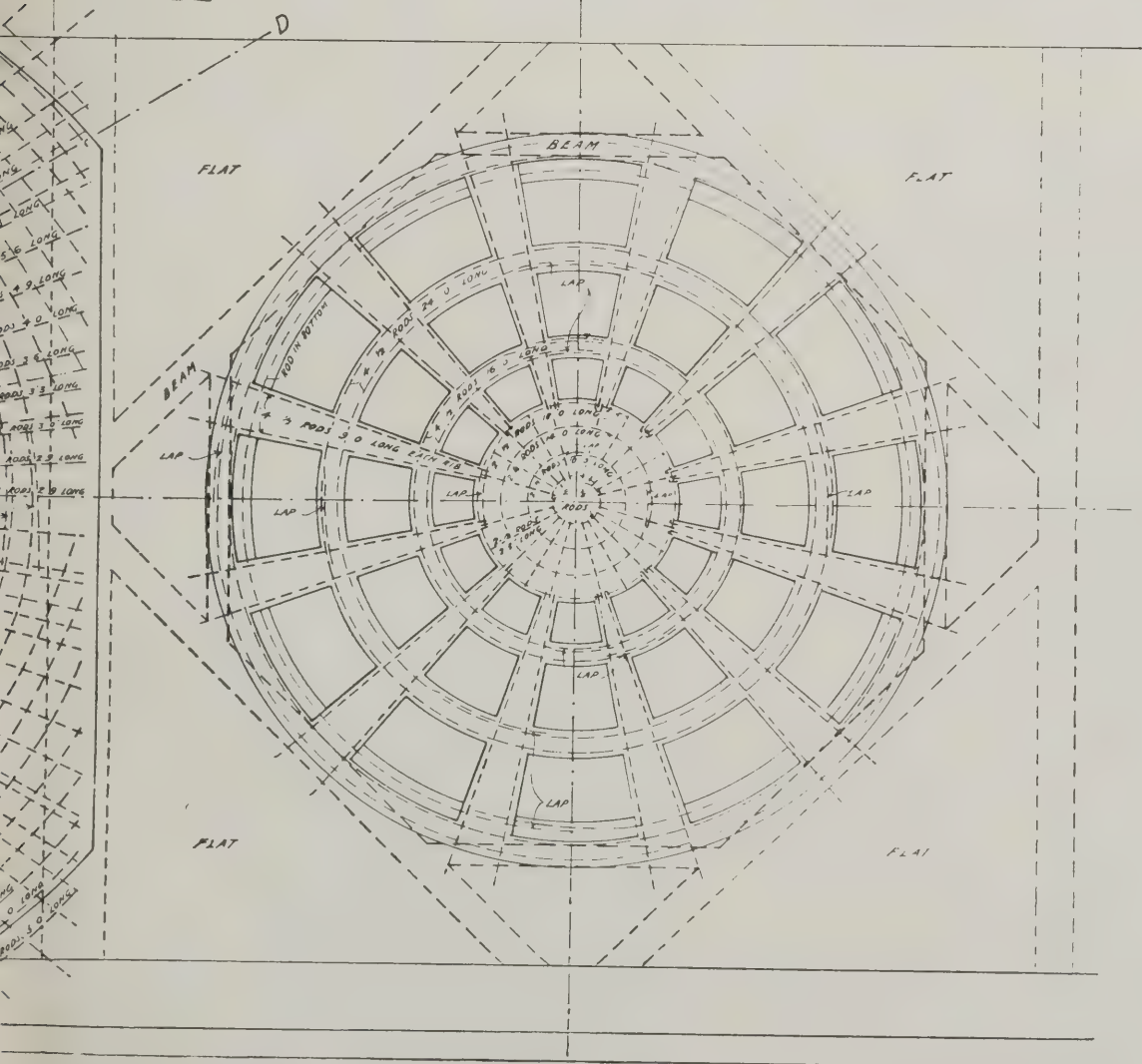
The swimming pond completed.



These dome lights are over the banking-hall of the Union of London and Smith's Bank at Hull. As will be apparent from the drawings, a form hoops over which transverse rods are hooked where shown. Externally polygonal skylights cover the coffering, and it is worthy of note that the drawing represents a domed interior at such short range without unpleasant distortion in the foreground, and photography also intensifies the contrast as an indication of the actual work. The domes were cons



TWO DOMICAL
SKYLIGHTS : IN
REINFORCED
CONCRETE ::



ffered dome of ribs without panels is first formed of concrete reinforced with plain rods, the horizontal reinforcements being lapped to curved glazing is necessary—an important saving both in first cost and maintenance. It is unfortunately impossible to photographically the glazed coffer and the ribs, which in the illustration appear unduly prominent. The photograph, therefore, should be taken only the Cubitt Concrete Construction Co., of London, W.C.

R.I.B.A., ARCHITECTS.

MOSS'S REINFORCED CON-
CRETE SYSTEM.

Several examples are here shown of the reinforced concrete system employed by Messrs. William Moss and Sons, Ltd., in which the concrete is bound to the steel by means of looped straps, which at the same time act as shear members (see Figs. 1, 2, and 3). It is claimed that this system of binding the two materials ensures great rigidity, affording effectual resistance to sudden shocks or to such continual vibration as would occur from constant traffic or the working of machinery. This system was practically unknown in this country until it was introduced by Messrs. Moss, but it had already been employed for a long time, and to the almost entire exclusion of all other systems, by the Prussian Government in all public works in Berlin. The system there in use is the Pohlmann system, the sole rights for which in this country are held by Messrs. Moss and Sons. Messrs. Moss, however, hold their own patents for concrete reinforcement; and one of their improvements on the Pohlmann system ensures that the centre of gravity of the steel reinforcement shall occur much lower than it does

in the earlier invention. Moreover, it is important to observe that Moss's patent bars are exclusively rolled in England, in order to ensure that the steel shall always be up to the British Engineering Standards Committee's specification.

The coal bunker shown on p. 235 was recently completed by the firm for Mr. Cecil Walton, at Whitehaven, to carry 1,000 tons of coal: and the water tower illustrated on the same page is now being erected for Sir W. G. Armstrong,

Whitworth and Co., to carry 200,000 gallons of water. The tower is subjected to extraordinarily high pressures. The centre cylinder will carry 65 ft. of water—probably the greatest head of water in any reinforced concrete tank in this country.

The illustration of a concrete bridge that has been erected by this firm, and the plan showing their system of flooring, will, with the other illustrations, afford some indication of the wide range of service to which the system is applicable. The firm

by no means confine their attention to engineering works, but have executed a number of floors and other reinforced concrete structures that are of direct interest to architects.

Messrs. Moss lay stress on the desirability of reinforced concrete work being always designed by the architect, or by the responsible contractor under him, rather than by specialists who are not also contractors. It will be remembered that Messrs. Moss and Sons are the direct contractors to the Office of Works for the whole of the reconstruction work at the National Gallery.

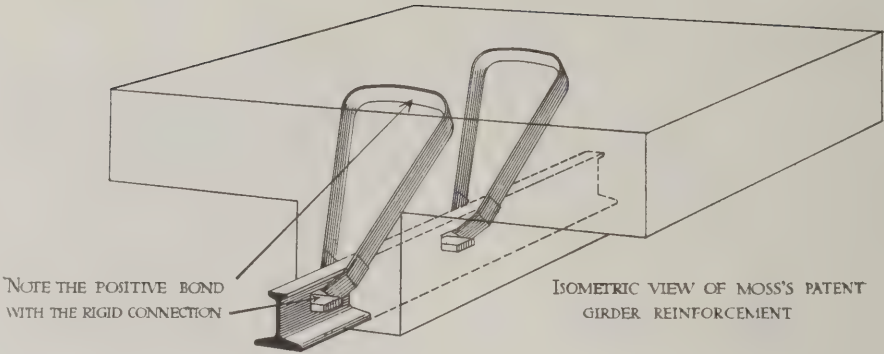
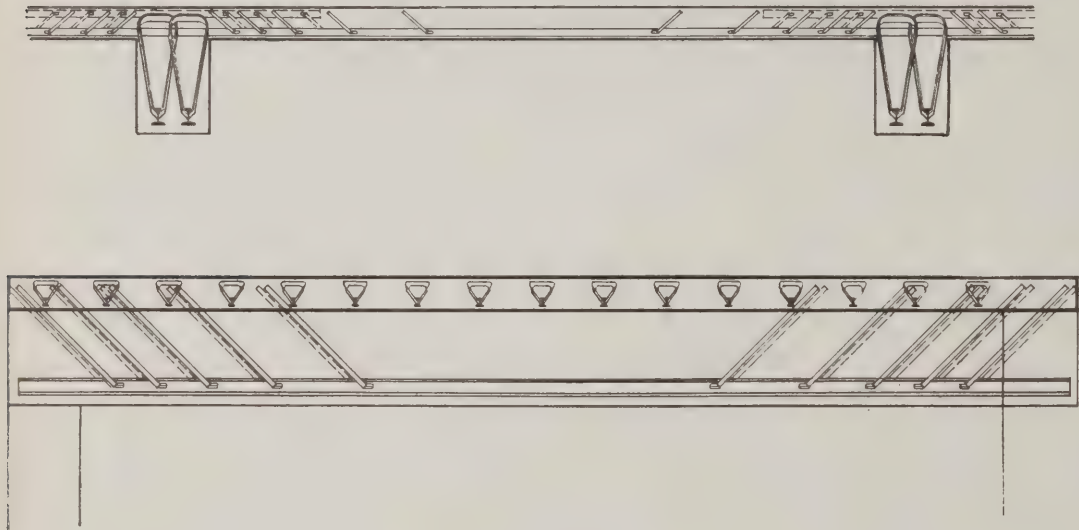
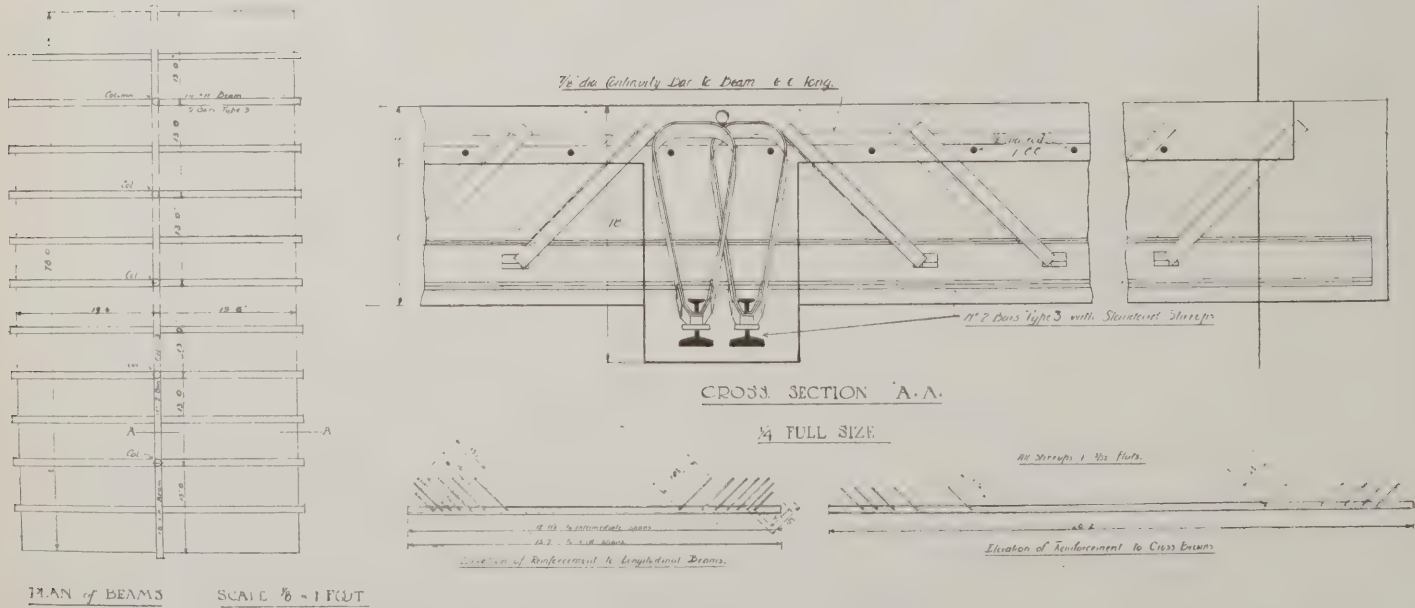


Fig 1.



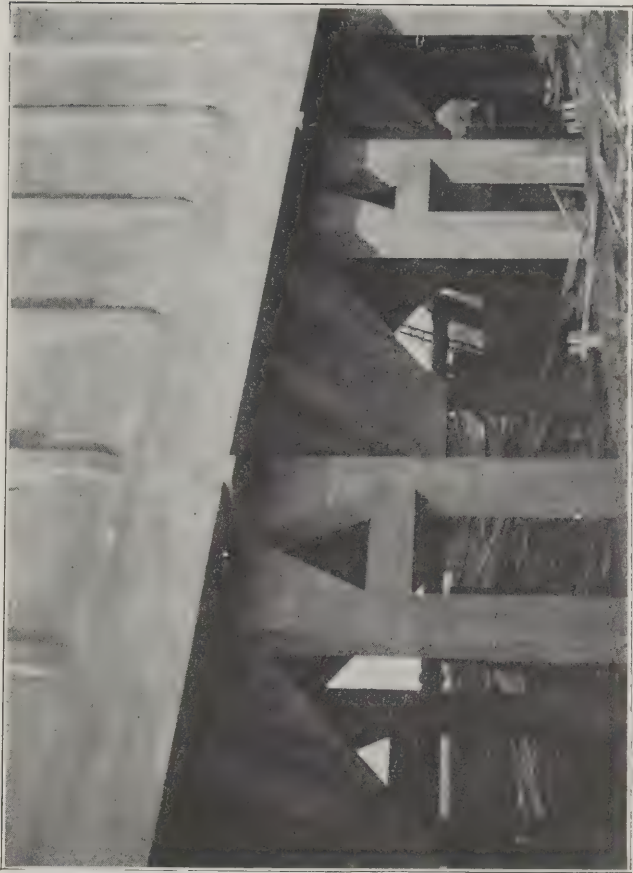
Figs 2 and 3.



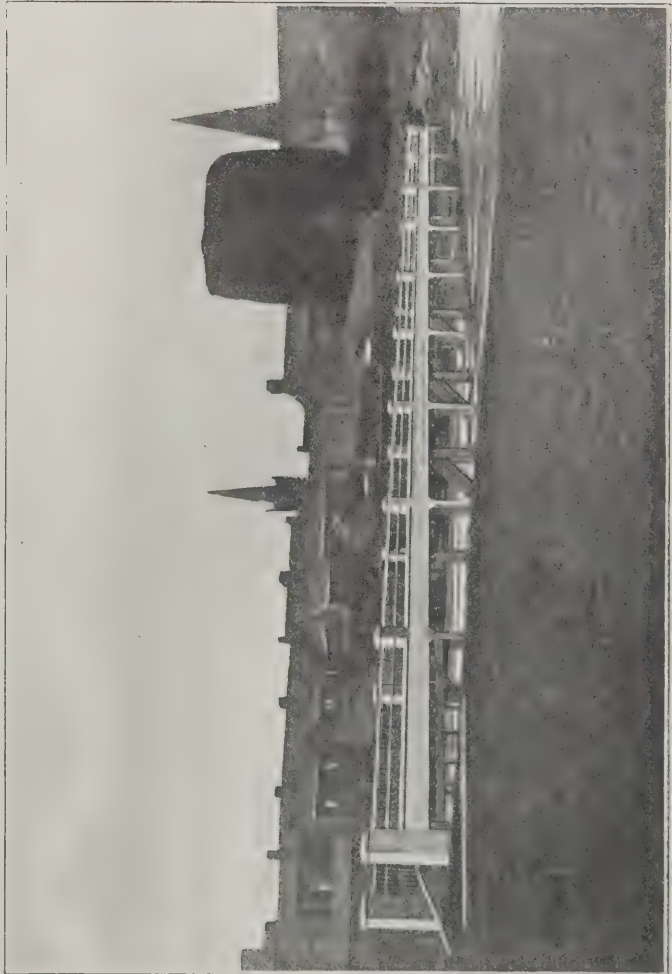
REINFORCED CONCRETE FLOOR AT THATCHAM, CARRIED OUT ON THE MOSS SYSTEM OF REINFORCEMENT



200,000 gallon Water Tower in course of construction for Sir W. G. Armstrong, Whitworth, and Co.



Bunker to hold 1,000 tons of coal at Whitehaven.
WORKS EXECUTED ON THE MOSS SYSTEM OF REINFORCED CONCRETE



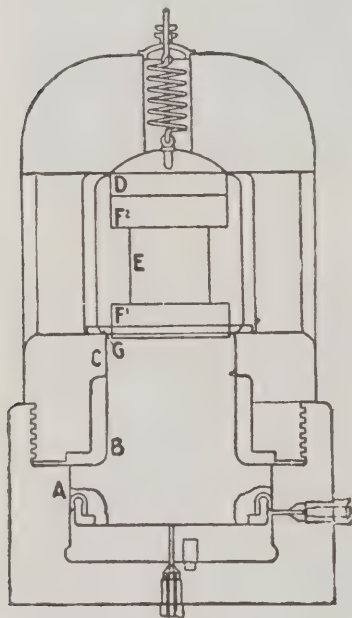
Bridge at Listowel, Ireland.

MACHINE FOR COMPRESSION TESTS
OF MORTAR AND CONCRETE.

According to the new German standard specifications for Portland and iron Portland cements, the leading test is no longer that for the tensile, but that for the compressive strength. For this reason the manufacturers of testing machines have endeavoured to build a serviceable, simple and cheap compression testing machine of ample capacity and accuracy.

The requirements for such a machine are stated by Professor Martens as follows: (1) It ought to be constructed for 50 tons greatest capacity. (2) Its accuracy ought to be within 1 per cent. (3) It ought to be used in accordance with that accuracy, making allowance for the error. (4) It ought to be calibrated in a reliable manner. (5) It ought to be provided with two spring gauges with degree dimensions, each fitted with an independent stop valve and a frictionless maximum pointer; it is further advisable to instal at the side of the gauges a simple but reliable pressure recorder, in order to have as a check an automatic record besides the readings.

Testing machines, says Mr. H. Burchartz, in the "Engineering Record," constructed in accordance with these require-



ments are now built by several firms in Germany. The machine built, for example, by Oscar A. Richter, Dresden, is made of cast steel, is only 50cm. (20in.) high, can be easily placed on a table, and consists, as the accompanying illustration shows, of the press cylinder A, and the counter-bearing C screwed into the cylinder by a flat thread. The piston B, fitted with a leather-cup packing, moves easily in the cylinder, while at the head of the counter-bearing a spherical-topped plate D is suspended by means of a weak spiral spring. This plate, forming the upper bearing plate, is during a test forced against its bearing so that the pressure is distributed vertically and equally over the pressure surfaces of the specimen. The specimen E is set between two specially hardened steel plates F, which if necessary can be easily exchanged and faced by grinding.

A screw pump, connected to the press, is screwed into a bronze piece in which two valves are provided as inlets and outlets for the water. The water for the testing machine can be obtained from the city mains. One admission pipe leads from the press to the two control gauges.

SANITARY APPLIANCES.

The General "J" Catalogue issued by Messrs Twyford's, Ltd., sanitary potters, Cliffe Vale Potteries and Enamelled Fireclay Works, Hanley, Stoke-on-Trent, with show-rooms in London (120, Southampton Row), Birmingham, Glasgow, Manchester, Leeds, and agencies in many of the chief cities abroad, comprises 515 large quarto pages (10½ ins. by 12½ ins.), and is finely illustrated and sumptuously printed on art paper, as well as replete with practical information. It begins with a very useful "short description of the clay wares used in Twyford's sanitary appliances," namely—(1) white "C.V." earthenware, (2) "Adamant" fireclay, and (3) "Vitrina" fireclay: (1) consisting of a pure white clay body specially selected for its density and extra-fine texture; (2) a buff ware (which, however, may have a white finish) of great strength; and (3) an absolutely non-absorbent material. The various sections are respectively headed: Baths, Lavatories, Water-closets, Urinals, Sinks, Bidets, Specialities, and Accessories. Under each section there is much in pattern and arrangement that will be found helpful and suggestive; but perhaps the most instructive is that relating to Specialities, in which are included fixtures for hospitals, asylums, and other public buildings, as well as for several more or less special services. But, taking the catalogue as a whole, the architect and the sanitarian must find it invaluable for consultation, whether the dominant object be decorative effect or sheer utility.

GAS LIGHTING AND HEATING.

The current issue of "The Medical Magazine" contains an interesting report of some experiments recently carried out at the Lewisham Infirmary by the Medical Superintendent, Dr. F. S. Toogood, for the purpose (1) of comparing hygienically the relative values of the open fire and the gas radiator as heating agents; (2) of ascertaining whether, and to what extent, the atmosphere of a room is affected by incandescent gas burners and lamps; and (3) of ascertaining the hygienic value of the gas fire. Dr. Toogood's general conclusions are to the effect that "these experiments may be regarded as having proved conclusively":—(1) That in both large and small apartments which have normal means of ventilation, gas consumed in modern incandescent burners can be used for lighting without any detriment to health, being found, in fact, to assist ventilation by the increased circulation of the air. (2) That a gas fire, properly constructed and fixed, not only does not vitiate the air, but is a valuable adjunct to the ventilation of the room. Its advantages in the sick-room—in respect of its reliability, avoidance of noise, freedom from dust-producing propensities, and saving of both work and anxiety—are obvious to every professional man and woman. (3) That in large rooms, adequately ventilated, flueless gas stoves can be used for heating without any hygienic disadvantages, the heated products of combustion (mainly CO₂ and water vapour) ascending quickly above breathing level. This method of heating—by radiation and convection from flueless gas stoves—is economical, but proper ventilation of the buildings in which it is adopted is essential; which, of course, is also the case whatever means of heating be adopted. A ward or other public building in which gas radiators cannot be used with advantage is improperly ventilated.

FEDERATION NEWS.

Manchester, Salford, and District.

The annual dinner of the Manchester, Salford, and District Building Trades Employers' Association was held in the Marble Hall, Albion Hotel, Piccadilly, Manchester, on February 8th, the President (Mr. Harry S. Daniels) in the chair. The company numbered about eighty.

Amongst the guests who had accepted the committee's invitation were: The president (Mr. J. W. White), and past president (Coun. S. Smethurst, J.P.), of the National Federation of Building Trades Employers; Mr. Frank Woods, Bolton (President of the Lancashire, Cheshire, and North Wales Federation); Mr. Percy S. Worthington (President, Manchester Society of Architects), Mr. Henry Price (City Architect), and representatives from the Councils of the City of Manchester and Borough of Salford.

Mr. George Macfarlane, J.P., proposed the toast of the "Manchester Society of Architects," and a résumé of his speech was given in last week's issue of the Journal. This toast was responded to by the President of the Manchester Society of Architects (Mr. P. S. Worthington) and the City Architect.

The toast of the "National Federation of Building Trades Employers" was proposed by Mr. Henry Matthews, J.P., and responded to by Mr. J. W. White, the National President, the latter referring to the far-reaching effects of the Workmen's Compensation Act, and the heavy burden it imposed on employers in the building trades.

Mr. William Tinker proposed the "Lancashire, Cheshire, and North Wales Federation," and Mr. Frank Woods, Bolton, President of the Lancashire, Cheshire, and North Wales Federation, in responding, complained of the difficulties that arose from trade unions allowing their members individual freedom of action, without consideration of any agreements they had entered into with the employers' organisations through their National committees.

The toast of the "Municipalities of Manchester and Salford" was proposed by Mr. T. A. Locan. Ald. J. R. Wilson (chairman of the Improvements Committee for the City of Manchester), and Ald. G. T. Jackson (chairman of the Building and Bridges Committee for the Borough of Salford) responding.—JOHN TOMLISON, Secretary.

COMING EVENTS.

Friday, March 3.

ARCHITECTURAL CRAFTSMEN'S SOCIETY, Glasgow Technical College.—James S. Boyd, Licentiate, R.I.B.A., on "A Study of French Masonry." 8 p.m.
ROYAL SANITARY INSTITUTE, 90, Buckingham Palace Road, S.W.—Prof. H. R. Kenwood, M.B., on "Elementary Statistics." 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS, 5, St. Martin's East, Leicester.—Arthur Wakerley, F.R.I.B.A., on "The Growth and Development of Leicester." 8 p.m.

Saturday, March 4.

ARCHITECTURAL ASSOCIATION, 18, Tufton Street, Westminster.—Third Spring Visit, Recruiting Station and Stables, Whitehall. Meet at building, 2 p.m.

Monday, March 6.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace Road, S.W.—Prof. H. R. Kenwood, M.B., on "Water: Composition, Pollution, and Purification." 7 p.m.

ARCHITECTURAL ASSOCIATION, 18, Tufton Street, Westminster.—A. R. Jemmett, F.R.I.B.A., on "The Functional Application of the Orders to Modern Buildings." 7.30 p.m.

LECTURES ON MEDIEVAL ARCHITECTURE, Lecture Theatre, Victoria and Albert Museum.—Banister Fletcher, F.R.I.B.A., on "German Medieval Architecture—the Romanesque Period." 5 p.m.

SOCIETY OF ENGINEERS, 17, Victoria Street, Westminster.—E. Scott-Snell, on "Petrol Air-Gas," at the Institution of Electrical Engineers, Victoria Embankment (near Waterloo Bridge). 7.30 p.m.

Tuesday, March 7.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace Road, S.W.—E. J. Steegmann, M.B., on "Elementary Science: Physics, Chemistry." 7 p.m.

GUILD OF ARCHITECTS' ASSISTANTS, Prince Henry's Room, 17, Fleet Street, E.C.—E. J. Dixon, A.R.I.B.A., on "The Town Planning Agitation." 7.30 p.m.

LECTURES ON ANCIENT ARCHITECTURE, Lecture Room, British Museum.—Banister Fletcher, F.R.I.B.A., on "Basilican Churches Outside Rome; Baptisteries, Tombs." 4.30 p.m.

Wednesday, March 8.

WORTHFUL COMPANY OF CARPENTERS, Carpenters' Hall, London Wall, E.C.—Noel Heaton, B.Sc., F.C.S., on "The Use of Glass in Building." 7.45 p.m.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace Road, S.W.—E. J. Steegmann, M.B., on "Elementary Science: Physics, Chemistry." and lecture. 7 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION, 6, Higham Place, Newcastle.—Meeting of Council, 7 p.m. Association Ordinary Meeting, 7.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Council Meeting, 4.0. J. H. Sellers on "The Architect's Use of a Library." 6.30.

Thursday, March 9.

SOCIETY OF ARCHITECTS, 28, Bedford Square, W.C.—W. S. Frith on "The Relation of Sculpture and Carved Ornament to Architecture." 8 p.m.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, March 8th, 1911.





NORTH PAVILION OF SCHEME FOR THE REBUILDING OF REGENT STREET, LONDON, BETWEEN NEW BURLINGTON STREET AND CONDUIT STREET
FRANK T. VERITY, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MARCH 8th, 1911.

Volume XXXIII.

No. 841.



BAY OF CEILING, ELIZABETHAN HOUSE, CROSCOMBE.

(See page 254)



This hall is capable of seating 250 persons, with another 80 in the gallery. The joinery is of fumed oak and the ceiling of fibrous plaster, modelled by Mr. C. H. Mabey, of Westminster, who also carved the caps of the pilasters. The architects were Messrs. Withers and Meredith, F.F.R.I.B.A., of 50, Cannon Street, E.C., and the contractors were Messrs. Somerford and Son, of Clapham.

NEW HALL, QUEENSWOOD SCHOOL, CLAPHAM PARK, LONDON, S.W. WITHERS AND MEREDITH, F.F.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

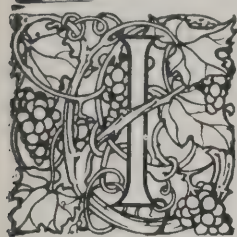
MARCH 8th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 841.

NOTE: The List of Contents will be found on page V. of the front advertisements.

The Architectural Development of London.



It was said once by an eminent English novelist, that Paris was a city, and London a collection of large villages. The statement was no doubt somewhat exaggerated, perhaps consciously and with the intention of producing an effect; but in a wide sense there is a great deal of truth in it, and it was brought to our recollection in

reading over the published papers and discussion on the subject in the current issue of the Institute Journal. For it represents exactly the point which the speakers who took part in the discussion totally failed to see. Both the First Commissioner of Works and Professor Pite wandered off into the declaration that London possessed a great many beautiful buildings; perhaps Professor Pite, in his enthusiasm, a little over-stated the case; but we quite agree in the main. As far as the Houses of Parliament are concerned, we should be prepared to go further than either speaker, and to say that it is one of the finest architectural conceptions in the world, ancient or modern, and that it is to be regretted that so few Englishmen seem to be aware of the fact. But all this is not to the purpose. It is no use saying that we have fine existing buildings if (1) we cannot prevent bad ones being erected in important situations, and if (2) we do not know or care how to place the good ones. It is the second which is the more important consideration of the two, and the one least understood. It is the want of understanding it which has led to that difference between Paris and London which is signalled in our novelist's drastic criticism; it is the want of understanding it which led the First Commissioner, if we remember right, to make a remark (not formally reported in the Institute Journal) on the absurdity or unwisdom of people praising foreign cities and discrediting their own. It is because, in some foreign cities, at all events, they see an attention to the placing of buildings and the axiality of streets and squares which they do not see in London; and if Earl Beauchamp cannot appreciate the distinction, he evidently does not understand the essential difference between a "city" and "a collection of villages." Stateliness is the especial quality of a city; picturesqueness that of a country town or a village. That there are other people besides the First Commissioner who cannot understand this is evident enough; the evidence received its climax in the speech of a painter who maintained that the picturesque in cities came about by unforeseen accident, and not by contrivance, and instanced the fine effect of Somerset House rising above the Embankment, which had been made without any preparation for such a building being subsequently erected over it!

Mr. Rickards, we gather from his paper, fully recognises this. He looks at a city as a whole. He remarks how closely related comparatively distant landmarks seem when their surroundings are in harmony; "compare, for example, the apparently close relationship of portions of Paris with what seems undue separation between others in London." Nothing could be better put or more to the point. Paris, as a city, is a whole; London is not. And he makes a comprehensive and far-reach-

ing observation in another direction, in pointing out that, apart from the practical advantages of direct communication, there is no artistic gain in such London developments as Kingsway and its approaches, if the improvement is carried no further than as it exists on paper, "and is confined to one dimension"; a good way of expressing it. He adds: "It may be argued that the general lines are laid down for posterity, to be decorated by works of art of a more enlightened age. That is certainly characteristic of our usual method of half measures, and the British way of missing the spirit of an imported idea in its entirety." It may be added that there is not much space left for the more artistic decoration "in a more enlightened age," if the new street has been to a great extent filled up with buildings of inferior architecture, which will become properties not easily got rid of. This is the dilemma which we called No. 1 above. It is not much use having perhaps one or two really good buildings in a new line of street, if we are unable to prevent the erection of inferior ones on the remaining sites.

But dilemma No. 2, the want of any right perception as to the placing of buildings which are good in themselves, is the more serious of the two, and the one which is least realised. Even Mr. Rickards does not seem quite to realise it, for he refers to the Albert Hall as having provided "a focal point very rightly placed"; but he does not mention the characteristic fact that the Albert Memorial, which is connected both in sentiment and architecturally with the Albert Hall, is perceptibly out of axis with it. How many people in London, we wonder, either know or care about that? Yet in Paris such a blunder would have made the authors of it a public laughing-stock. Take one or two other examples. There is the Constitution Hill Arch, moved from its original monumental position at the bidding of an irrepressible First Commissioner, who, under the influence of zeal without knowledge, made his reign a most mischievous one for London; placed facing towards an irregular space with no architectural form and no architectural centre, cut up by road-lines into a series of shapeless patches of ground; a plan which is that of an estate-agent, not of an architect. Yet this so-called improvement received at the time the unanimous commendation and congratulations of the daily Press; and that it was a mistake people are only just now beginning to find out, some thirty years or more after date. Then there is the even worse failure of what is satirically (one might think) called "the Marble Arch improvement," where the arch is left standing at one side of a piece of roadway not even parallel with it, because that line of the road was supposed to be more convenient for traffic. If the official authorities who control these improvements have not yet learned that there is anything to be considered in them except traffic lines and police control of traffic, they have not yet learned the rudiments of their business. Then there is the small artillery memorial in St. James's Park, closely facing the York column and steps, and yet put deliberately out of axis with them, apparently to save moving a few feet of railing and sidewalk. And now there is the Bill for a new bridge over the Thames, a scheme shown, to use Mr. Rickards's happy expression, "in one dimension only,"

the design of the bridge being entirely evaded, and the roadway planned so as to treat St. Paul's Cathedral not as a central object to lead up to, and govern the whole, but merely as an obstacle to be skirted. All this is what comes of neither the public nor the official authorities having any idea of the importance of axial laying-out in cities.

Mr. Waterhouse's elaborately worked-out scheme for the appointment of an architect for each borough of London, and a central architect with supreme authority, whose special duty should be to secure the best architectural laying out of new streets, and the best architecture in them when laid out, will be startling to many for its boldness and extended scope; but there is nothing to prevent its being carried out except public indifference to the subject. Mr. Waterhouse's proposed provisions—that the architects appointed should be the highest men in the profession; that in order to secure these there should be no limitation of private practice; that they should be appointed only for three years certain, with the appointment renewable or not, according to circumstances; all these are wise suggestions which would go far to ensure the success of such a scheme. But there must be a supreme head, whose duty it would be to supervise schemes of London improvement as a whole, the borough architects looking after the details. To the supposed objection to giving such "awful supremacy" into the hands of one man, Mr. Waterhouse replies, quite truly, that the "awful supremacy" exists, whether or no, and that it is wiser to fill it with a man than to leave it occupied by a vacuum. In short, a great deal is unquestionably going to be done in London before many years are out, in the way of alteration, and what ought to be improvement; is it to be done under proper architectural control or to be left to haphazard? If it is to be done under proper control, the machinery for that control has to be provided.

One curious anomaly in connection with the subject of London improvements is that some of them, owing to reasons of administration, come under another authority, that of the Office of Works, who might decide a problem in a manner quite different from what would be recommended or desired by the proposed municipal controlling architect. The incidents of London improvement which have come under the control of the Office of Works have not been very numerous, but they have occasionally been very important, and they have for the most part been very badly dealt with. This is only the natural result of the system under which the office of First Commissioner of Works is made a political and party appointment. It is, notoriously, a means of finding a place for a junior member of the party in power at the time, and is practically regarded merely as a political halfway house to something considered to be of more importance. Naturally, therefore, the selection to this office is not made with any regard to special knowledge of architectural subjects; and to find an instance of a First Commissioner who had any real power of dealing with architectural problems we must go back half a century, to the days of Sir Benjamin Hall. Anyone who reads the contemporary accounts in connection with the old Foreign Office competition will recognise that Sir Benjamin Hall, who was First Commissioner at the time, was a man of real critical perception in regard to the architectural treatment of Government buildings; and we cannot recall that there has been any First Commissioner since his time of whom this could be said. The fact is that the position of First Commissioner of Works ought not to be a political one at all; the appointment ought to be permanently conferred, without distinction of party, on some one specially qualified for it, who would retain the post independently of any changes in the Government. Until this is made the rule, one cannot be surprised to find that the Office of Works contribute little to the architectural improvement of London. It could hardly be expected to be otherwise under such radically illogical conditions, "illogical" being the mildest word that can be applied to a condition of affairs that obviously ought not to be tolerated by a public having the slightest claim to a sense of fitness.

Decorating London for the Coronation.

IT appears that the Government of New Zealand has applied for permission to erect a triumphal arch on the line of route of the Coronation procession; the probable site for the trophy (if permission is given) would be some position in Whitehall between the Duke of Cambridge statue and Trafalgar Square. With a vivid recollection of the preposterous erection which the Government of Canada was allowed to erect in the same position at the last Coronation, we can only say that we hope a condition will be made that the arch should be designed by an architect, or the design submitted to some competent architectural judgment before its erection is sanctioned. The Colonies seem, as far as we have had any instances in this country, to have not the slightest idea of doing such things in an artistic manner; they never seem to soar any higher than the idea of piling up examples of their industrial and agricultural products in the form of an arch or pyramid *rudis indigestaque moles*—presenting economic facts in a crude form. An arch of the kind ought to be a work of art, or it is better away. But the whole question of the decoration of London for this great occasion ought to be considered and dealt with in a consistent artistic spirit. Sir William Richmond and two or three other artists of note have addressed a letter to the City Council of Westminster urging this view, and offering their services gratuitously in working out a scheme. It is to be hoped that the offer will be accepted and acted upon in the spirit in which it is made; too often, in this country, any such offer is resented as an intrusion. One detail we may suggest in connection with the subject. As it is understood that the way will now be cleared for the use of the processional road from Buckingham Palace into Whitehall, it is surely time that the commonplace electric light standards erected by the City of Westminster along the Victoria Memorial Road should be removed and replaced by something better. That they are only temporary we have several times been told; but they have been temporary for a long time now.

The Structural Problems of Winchester Cathedral.

THE problem of dealing with the south aisle of the nave of Winchester Cathedral is exercising the minds of the Dean and Chapter to a great extent. Although the aisle is shored up with heavy timbers, a constant movement is taking place, and tallies put over the cracks part to such an extent in ten days that an ordinary box-ruler can be inserted edgewise. Closer examination in the nave reveals conditions which are the cause of great anxiety. The whole nave stands on treacherous soil, but running in a northerly direction from the south across the part where are William of Wykeham's chantry, the famous black marble Tournai font, and Jane Austen's grave, there is a broad tract of peculiarly bad conditions, with 5ft. of peat and 3ft. to 5ft. of soft silt. Wykeham's chantry is cracked and crushed, and there are unmistakable indications that the piers on both the north and the south side of the nave are gradually sinking. The result is that the heavy weight of the south aisle vaulting is thrown on the south wall, which is unable to withstand the thrust, and is being pushed outwards. This presents a problem which is exceedingly trying, in view of the fact that it means an increased appeal to the nation. Difficulties are apparent, but they can be overcome, provided ways and means are forthcoming. Underpinning for the south wall is the first necessity, and this has just been begun, but it is impossible to guarantee stability for the structure unless additional means of support are provided.

The removal by Bishop Horne of the ancient Norman cloisters is responsible for much of the weakness of the wall. Mr. T. G. Jackson, R.A., has recommended two methods of strengthening it—one by means of ordinary Perpendicular buttresses in harmony with Wykeham's work against the ancient flat Norman buttresses, and the other by means of a cloister buttress, with a flying buttress above. The latter is the more expensive, but it is regarded as by far the most effective, and

if the series are turned into a proper cloister, mediæval in character, it is suggested that all future monuments shall be placed here. Models of these two designs, in wood and canvas, were placed *in situ* recently against the south wall, and inspected by the Dean and Chapter, but it is understood that Mr. Jackson has been asked to prepare a third scheme. In all probability the piers of the nave will have to be underpinned, as well as the south wall buttressed, and in that case a large sum of money beyond that already asked for will be necessary. While the work on the south transept is approaching completion, and the fencing is being cleared away under the slype, where enormous buttresses have been built, it is by no means certain that the south wall is safe. The wall is roft, thick, and is out of plumb to the extent of half of that amount. On the north side and at the east end the Cathedral is now quite safe; indeed, the measures which have been adopted have proved most effectual, and the building is on a surer foundation now than it has ever been before.

In excavating on the south side of the nave within a few feet of the west front, for the diver to begin operations, the workmen recently came across a very fine specimen of Roman tesserae at a depth of about 9ft. below the surface. It measures $3\frac{1}{2}$ ft. by 2ft., and is of rich design, similar to that found some years ago in Little Minster Street, which is preserved in the City Museum. The fragment, which is in an excellent state of preservation, was lifted out bodily and without disturbance, and has been placed with the collection of relics found during the progress of the work. Among other articles found at the same time were a late Roman lamp in earthenware and a mediæval candleholder.

The Annexe to Westminster Abbey.

WORK has just been started on the annexe to Westminster Abbey, which is to be used in connection with the Coronation of King George. It has been designed by Mr. A. Y. Nutt, of the Office of Works, at Windsor Castle, and will be similar to the temporary building which was erected for the Coronation of Edward the Seventh. The annexe of 1902, which was also designed by Mr. Nutt, so closely resembled in style the west end of the Abbey, which it adjoined, that visitors who were not familiar with the Abbey found it difficult to realise that it was only a temporary addition. The building was composed entirely of plaster and wood and the exterior was skilfully "toned" to resemble the grey stones of the Abbey. There were niches on the west side, in which were placed statues of the seven King Edwards, and some of these will possibly be used again. The annexe will be rectangular, with an entrance hall and retiring rooms on the side facing Westminster Hospital. The interior will present the appearance of a baronial hall, with its timbered roof supported by wooden piers and arched beams, and its walls covered by tapestry and arms. The annexe will be about 112ft. by 60ft., by 24ft. It will be used as a robing room, from which those who are attending the service will pass direct to their seats in the Abbey. The work within the building, including galleries and platforms for spectators, is being carried out by Messrs. John Mowlem and Co., and one of the conditions of the contract is that not a single nail or staple shall be driven into any part of the fabric, and that no braces or beams shall rest on or against the pillars and walls.

The National Town Planning Conference.

THE National Town Planning Conference at Liverpool was largely and rather literally occupied with the groundwork of the subject, a great part of its two days' meetings being taken up with the consideration of problems, some of them suddenly and unexpectedly propounded, relating to peculiar local circumstances, with respect to property in land, and to diverse industrial and other conditions which appear to complicate the issue. Indeed, the delegates seemed so eager

to impart information upon these fundamental matters that the conference must have been as instructive to the experts who convened it as it was to the invited delegates, thereby the more completely vindicating its title of "conference." It is doubtful, however, whether, in assuming this aspect, the proceedings did not take rather an unexpected turn; the Advisory Council having, apparently, had on this occasion but few opportunities of disseminating the knowledge which for some time past they have been steadily accumulating; while some of the numerous questions with which they were bombarded bore a suspicious resemblance to "heckling." The practical outcome of the conference is hardly yet evident. There was but a casting of bread upon the waters; but evidently the Council are prepared to "let Patience have her perfect work," and to go on gladly learning and gladly teaching on a subject that luckily grows in interest, as well as in difficulty, as investigation proceeds. There is, of course, some danger in diffuseness; but there is even greater danger to be apprehended from the narrow sectionalism of which signs are never wanting in any great movement. The architect and the builder, by throwing themselves heartily into the movement, may do much to prevent the excesses of sentimentalism on the one hand, and of cupidity on the other.

The late Herr Von Uhde.

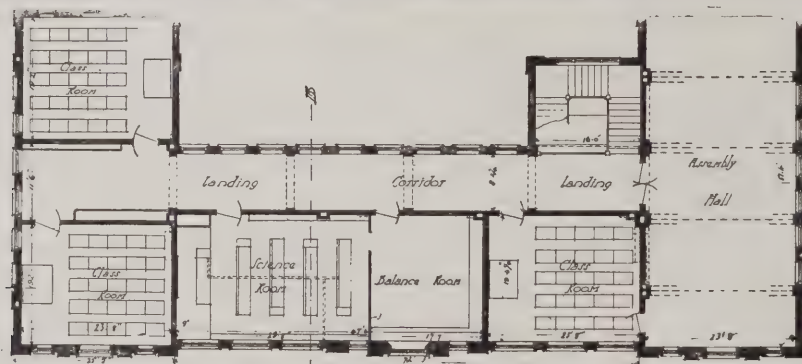
BY the death of Herr Von Uhde, Germany and the world loses a remarkable religious painter, who treated New Testament narrative and New Testament personages in a spirit of his own. His art was a reaction against conventionality in religious painting. In treating scenes from the life of Christ, he thought he could give a new reality to them by depicting the personages grouped round the sacred figure as if they were studied from those seen around him in the daily life of his own day. Rembrandt had done the same, probably without thinking about it, and in a spirit of naïveté; Von Uhde did it on principle, and as the best way of appealing to modern feeling. It was illogical in a sense, no doubt; but his pictures, some of the principal of which were exhibited some years ago in London, were full of genuine pathos and expression. He was a powerful painter in a technical sense, and possessed by a very earnest spirit in his art.

King Edward Memorials: King George's Wish.

IT having been stated by Lord Knollys that King George prefers non-equestrian statues of the late King, Bristol has decided to substitute a statue representing the late King standing in his robes. Sheffield had favoured the idea of an equestrian statue, but the Lord Mayor of that city has stated that the wishes of King George, now that they have been made known, will undoubtedly be respected. These circumstances seem to complicate the Liverpool difficulty, where equestrian statues are of the essence of the scheme for tampering with St. George's Hall. It is to be hoped that the promoters of that scheme will also perceive the necessity of respecting King George's expressed view. The citizens of Sheffield are turning their attention to one or two alluring schemes of town planning in which the late King could be worthily commemorated by the creation of a King Edward Square, or alternately by street improvements near Fitzalan Market.

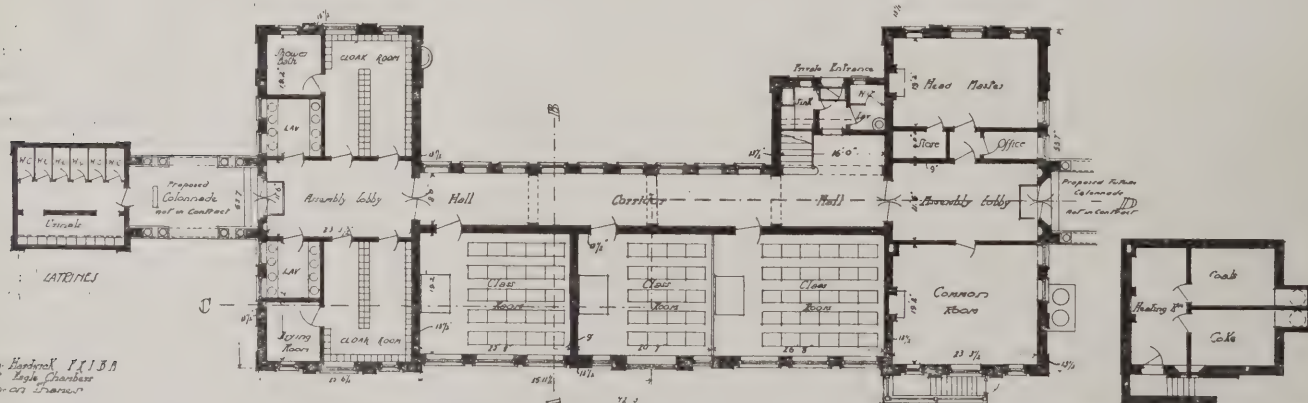
The Access to Conway Castle.

FOR the past four years the Conway Town Council have been considering how best to improve the means of access to the ancient castle of Conway, without detriment to its historic character and aspect. The castle stands on an eminence of limestone rock, the level of its courtyard being perhaps a hundred feet above that of the street from which the present staircase and sloping pathway ascend. The pathway is necessarily steep, and is so narrow, especially at the lower end, that only one person can pass along it at a time. When events take place in the castle which attract



FIRST FLOOR

Scale of Feet



GROUND FLOOR

BASEMENT

COUNTY BOYS' SCHOOL. MAIDENHEAD.

A. JESSOP HARDWICK, F.R.I.B.A., ARCHITECT.

a numerous gathering of people, the very narrow, bottle-neck exit is a source of possible danger. On the opposite side of the Gyffin Road, which skirts the western end of the castle, and at the corner of which the entrance is situated, stands the Guild Hall, the building in which the meetings of the Council are held. It is approached by a flight of steps, and the latest scheme (says the "South Wales Daily News") for a new way into the castle is that the Guild Hall stairway should be made use of, and that an appropriate bridge should be built over the Gyffin Road to connect with the present

pathway to the castle at a point sufficiently far back to allow of the widening of the main road. The Gyffin Road is in a cutting through the rock, so that the land rises on either side, and it would be possible to place the bridge across it either just above the Guild Hall doorway or further from the main road. Mr. Douglas, of Chester, has supplied plans and designs for both these proposals, and he has been asked by the Council to draw out estimates of the cost of both schemes. When these are received a full-sized model (in timber and painted cloth) of the proposed bridge will be put up.



COUNTY BOYS' SCHOOL, MAIDENHEAD. A. JESSOP HARDWICK, F.R.I.B.A., ARCHITECT.

COUNTY BOYS' SCHOOL,
MAIDENHEAD.

This design for the Maidenhead Secondary School for Boys was awarded the first premium in open competition, in which 145 designs were submitted to the assessor, Mr. R. S. Wornum, F.R.I.B.A.

The school has recently been completed. It is erected on a site of four acres, on high ground overlooking the town, and provides accommodation for 150 boys.

The plan is arranged so that extensions could be easily and economically made without disturbing the working of the school or interfering with the general scheme.

The design is of Georgian character, executed in red bricks of varying shades; relieved in its central parts by stone sparingly employed, and the roof is covered with red sand-faced tiles. The school is planned in two storeys, with all departments under one roof. Both floors have through corridors running practically from end to end. On the first floor is a spacious assembly hall, which is also used

as an art room. The corridors are divided in their lengths by a series of arches, and the floors are paved with jointless flooring of a deep red colour, the dadoes being formed of glazed bricks of a light golden green, with two narrow rows of small tiles to match.

The heating and ventilation installation has been carried out by Messrs. Rosser and Russell; the fireproof floors by Messrs. Homan and Rodgers; the gas lighting and fittings by Messrs. Christie's; the stone carving and plaster modelling in the hall, and also the principal rain-water heads, are by the Bromsgrove Guild of Handicraft. The leaded glass work, the entrance gates, and metal work, by Messrs. Humphries, Jackson, and Ambler; the fencing by Messrs. E. C. White, of Basingstoke. The furnishing is by the Educational Supply Co., to designs supplied by the architect, Mr. A. Jessop Hardwick, F.R.I.B.A., of Kingston-on-Thames. The contractor was Mr. J. B. Seward, of Wokingham; Mr. R. Squelch being clerk of works.

A REMARKABLE WATER-COLOUR
EXHIBITION.

The exhibition of water-colours at Messrs. Agnew's Gallery, in Bond Street, constitutes a quite remarkable opportunity of comparing and analysing the methods of different schools of water-colour, old and new. Though the collection is not a very large one numerically, almost every style of English water-colour is represented there, from the severely built-up composition of Varley's "Classical Landscape" to the delicate and finished detail of Mrs. Allingham's foreground scenery of cottage, trees, and figures. Varley seems conventional in comparison, but that is partly because of the restricted palette of the old water-colour period, which made anything like realism of colour impossible, and threw back the artist on resources of composition rather than of colour. De Wint had more colour available, but still relied greatly on composition, in which he is almost unequalled. One is able to see in this collection that David Cox, however much we owe to him for laying the foundation of a broad and what we may call a "wet" style in watercolour, occasionally let his breadth become too "blottesque." The central perfection of water-colour style is perhaps to be seen best in the works of the late Thos. Collier, of whom there are one or two splendid specimens. It is instructive to contrast these with the comparatively flashy and artificial effects of Copley Fielding, once regarded as a great light in watercolour, but who looks sadly weak and unreal by the side of Collier and his follower Wimperis. There are a good many examples of the smaller works of Turner, and one exquisite example of the modern landscape-painter who came nearest to Turner, A. W. Hunt, whose "Valley of Dolwyddelen" contains the most remarkable rainbow we have ever seen in water-colour, though its luminous effect was even surpassed in his larger oil-painting of the same subject. The exhibition affords an admirable opportunity for the study of style and effect in water-colour.



COUNTY BOYS' SCHOOL, MAIDENHEAD. GROUND FLOOR CORRIDOR & STAIRCASE.

Enlargement of Hampstead Town Hall.

Hampstead Town Hall is to be enlarged by the erection of a new building and alterations to the existing structure; the total cost of the work being estimated at £12,000. Mr. John Murray, F.R.I.B.A., is the architect.

THE ORDERS AND MODERN BUILDINGS.

BY A. R. JEMMETT, F.R.I.B.A.

In his paper on "The Functional Application of the Orders to Modern Buildings," which was read before the Architectural Association on March 6th, Mr. A. R. Jemmett, F.R.I.B.A., put forward the view that a structural feature may also perform functions that are not essentially structural.

ON thinking over the wording of the title—"The Functional Application of the Orders to Modern Buildings"—it seemed evident to me that the accent should be placed on the word "functional"—the application of the Orders in such a way as to fulfil a function.

A "Fundamental Mistake."

Now, we are all aware that some people may question the legitimacy of the whole proceeding; may contend, with much show of reason, that you cannot rationally apply the Orders to modern buildings—whether functionally or otherwise—particularly in this country, where Classic architecture is only an imported plant. Such people may well hold that the Orders, as perfected by the Greeks, were a natural production of the time and circumstance; that they were suitable to that time and those circumstances only; that they were applied by the Romans indiscriminately and without any real understanding—sometimes rationally, sometimes irrationally; that where they applied them functionally it was as much a matter of accident as of design; that the same remarks apply to the period of the Renaissance, which, as a matter of fact, was a fundamental mistake, turning architecture from the true path of progress and keeping it there ever since.

This is a point of view for which I have the greatest respect, but it is not the subject for discussion this evening. Obviously also, it would be most inconvenient to admit it here, as the admission would bring this inquiry to an abrupt termination. I will merely refer those who hold it to the dictum attributed to M. Duc, Grand Prix de Rome and architect of the Salle de Pas Perdues, of the Palais de Justice at Paris: "There is no architect without the Orders"—just to remind them of another point of view, and leave them to make what they can of it.

It seems necessary for our purpose to consider Classic architecture as much an acclimatised or naturalised citizen as a Lombardy poplar, a French partridge, or a Jersey cow; as much a home product as a Brussels carpet or a French case-ment; and to grant the legitimacy of the application of the Orders, provided they are applied in such a way as to perform a function. What are these functions? And how may the Orders be best applied so as to fulfil them? These seem to be the questions before us to-night.

Feature and Function.

It is, I suppose, the orthodox standpoint that, as architecture is a structural art, the chief function of each individual feature is a structural one. It is, I believe, contended that no feature has a right to exist except in discharge of some structural necessity, and that its value as architecture depends on the degree of success with which it exactly fulfils that function. Far be it from me to deny it, but I venture to suggest it is true only as far as it goes. The truth, perhaps, but not the whole truth.

If we consider for a moment the use of the Orders as elaborated by the Romans, and again by the earlier Italians,

we must admit that they often applied them in a way that was not strictly structural—as, for instance, in the Colosseum, with its concrete structure faced with superimposed tiers of applied Orders in stone—or in any colonnade with its intercolumniation too wide for the depth of its architrave.

Here we get features which are not exactly structural. The architrave, for instance, does not bear as a lintel from column to column as it would have us believe, but either includes the frieze in the same stone to get depth for the bearing, or else is jointed like an arch. When we remember that such features are to be found in most of the buildings since the time of the Greeks, where the Orders have been applied, we realise that, if we are to adopt the standpoint that the function of every feature is structural and structural only—if we take a strict view and refuse to admit any feature that is not an absolute structural necessity—it is evident that our use of the Orders will be extremely limited, and that there is very little scope for their application to modern buildings.

Building as Work of Art.

I would venture, then, to put forward the point of view that, although the chief function of every feature may be structural, yet it may perform other functions equally necessary to the completion of the building as a work of art. For we must remember that the structure of a building has not only to serve a practical purpose, but also to express that purpose in its general appearance. That although this purpose may be—indeed, must be—to some extent expressed in the general lay-out and grouping of its structural masses, yet this expression is not complete. These masses have to be shaped, modelled, and decorated, to draw out, heighten, and complete that expression. For although the general arrangement and structure of the building may, after examination and critical analysis, prove satisfactory to the mind, yet it has to appeal through the heart to those not capable of this analysis; and to those who are capable it has to make its appeal with a swiftness that does not allow time for conscious analysis—an instantaneous, instinctive, emotional appeal which subsequent critical analysis should only confirm.

If this be so, then the features employed in this process of drawing out and accentuating the expression already inherent in the general lay-out and structural grouping, to obtain this instantaneous emotional appeal, are performing a function, not altogether structural perhaps, but none the less necessary. If we use the Orders for this purpose we may, I think, be said to be applying them functionally. It is in this way that they were used by the Romans and the architects of the Renaissance.

Orders Functionally Applied.

If we endeavour to elaborate and illustrate this point of view, we perceive that the Orders may be applied in many ways, all more or less functional; that it is possible for an Order to fulfil a structural

function without necessarily fulfilling an expressive one; or an expressive but not a functional one, or both, or neither, and that their value varies accordingly.

For example, the main entrance to a large public building may need a porch or outside shelter, and for this purpose an open portico with columns and pediment may be erected. Here the Order may be so constructed as to fulfil its structural function, while at the same time the whole portico may serve to express and accentuate the entrance, and this expression may be more exactly obtained by the treatment of the detail and decoration of the Order in harmony with the purpose and character of the building.

In this case the Order seems to serve the functions both of structure and expression, but if the same portico is taken from the entrance and placed at random against some other part of the building, where it serves no practical purpose, the Order, no doubt, may still be so constructed as to serve its structural function of supporting its own roof, but it no longer fulfils the function of expressing the arrangement and purpose of the building. In fact, it has become a misleading feature, confusing the expression, however structurally perfect it might be in itself.

Expressing the Character.

Again, we all know the usual arrangement of a small group of municipal offices: offices on the ground floor with a central entrance, council-chamber on the first floor over the entrance, with smaller committee-rooms on either side. Where the council-chamber committee-rooms are given a height in proportion to their relative sizes, we get a structure which by its arrangement and its general grouping and outline expresses up to a certain point, simply by these means, the character and nature of the building. If, then, it is proposed to intensify and complete this expression by the application of an Order to the council-chamber, and perhaps a secondary one to the two committee-rooms forming the wings, so as to emphasise the fact that these are the important rooms, the Orders seem to perform a function of expression, and therefore to be legitimate, even though they are not required structurally. If, however, the actual columns or pilasters are not just applied to a wall already sufficiently strong, but form part of the wall itself, and are actually necessary for the support of the roof, being so spaced as to take the roof principals, they seem to perform a structural function also, and to have a greater value still as a means of expression, for they tell us more of the nature of the building. Arranged irrespective of the construction, they tell us something, and so have a certain value; arranged to express the construction, they tell us more, and so have a greater value.

But the point I wish to emphasise is that even if they perform no actual structural function, they may be used as means of expression in places where they are not a structural necessity, provided they are used in conformity with the laws of architectural expression.

Emphasising the Wrong Thing.

This seems to be the important point. The first thing necessary is to put the Order in its right place in the composition, where it expresses the right thing. If it is also structurally applied, so much the better, but this is a secondary consideration. An Order performing a structural function applied in the wrong place, where it emphasises the wrong thing, con-

fuses the expression of the building as a whole, and is worse than useless. In such a case its structural application does not interest us much. If on approaching a public museum we see a grand portico with pediment, and, taking this for the main entrance, we mount the flight of steps only to find ourselves confronted with a blank wall, or with a small door marked "Private" leading to the offices, it is no comfort to us to reflect that the Order has been applied to fulfil the structural function of carrying its own roof. As we wander round the building in search of the entrance, we are in no mood to admire its structural perfection. All we feel is that we have been taken in shamefully, and that we want the front door. Later on we may find time to reflect that even structural perfection itself is no good in the wrong place, and that the whole thing is a false idea and just a waste of so much good stone and honest craftsmanship.

The use of the colossal Order rising through two or more floors, a treatment which is just now so popular, is rather a difficult matter to handle. You can look at it in so many ways. As a method of expression it looks utterly false at first glance; but, after all, there is something in it. There are other things to express besides the obvious physical fact that the building is divided into several storeys.

Choice and Necessity.

Suppose you have to supply an acre of accommodation for some commercial purpose, the whole of the accommodation being of the same character throughout; and suppose the most convenient way would be to arrange it all on one floor. If the site is large enough, you would do this; but if it is only a third of an acre you have to divide it into three and place three floors one over the other.

Now, you do not do this because it makes a better or more convenient arrangement; quite the contrary. You do not do it because you want to, but because you have to. It is not the strong point, but the weak point of the design; you therefore do not want to say too much about it. It is a fact to be frankly recognised, but not unduly emphasised; you do not want to make a song about it. If, then, instead of emphasising each floor with a small Order, you include them all in one large one and express the floors with the windows rather subordinate features, you get obvious facts frankly recognised without undue emphasis, while the large Order, by its scale and treatment, seems to convey a truer suggestion of the unit of the building as a whole, and the nature and relative importance of the commercial concern of which it is the expression.

If, however, the three-floor treatment is a vital necessity of arrangement—a characteristic feature of this class of building—it would then be proper duly to emphasise the fact by boldly marking the three floors. To do this with an Order for each floor would perhaps be logical, but as a method of expression it seems rather crude and a needless elaboration of the obvious.

If we use this large Order, let us take care that we mean something by it, that it is suggested by the nature of the building, and not by the present tendency to bigness of scale. Rightly used, it seems to be a most flexible medium by which we can draw out from the building the most subtle shades of expression, wrongly used, nothing can be more misleading or better adapted for confusing expression.

Misleading Effects.

Imagine a building of four storeys all of the same character and importance, where there is no reason for accentuating one rather than another. To treat the ground floor as a basement to an Order rising through the first and second, and then to put the third in the attic, may produce a pleasing but most misleading effect. But if the different floors have each a separate and distinct character—say the different departments of a Government office—and there is something in the nature of the first and second to suggest that they be coupled together and emphasised, there seems no reason why this should not be done with an Order.

There are many other points, such as the expression by means of a large Order of a hall set back from the front and masked by several floors of small rooms, which it would be interesting to examine if the time at our disposal permitted.

As this paper is not intended to be a study in architectural expression, I will content myself with the suggestion that the principal value of the application of the Orders to modern buildings, taken into consideration our rapidly changing methods of construction and complicated practical requirements, is chiefly as a means of artistic expression; that used in this way they fulfil a function.

A Guiding Principle.

The principle that seems to guide us in their application is that they must in all cases obey the laws of architectural expression, and that a right method of expression is the essential thing. If in so doing they can also fulfil a structural function, so much the better, as the expression becomes more complete. They cannot, however, be applied to serve a structural function in defiance of the laws of expression—for the expression, not the construction, is the essential thing.

Perfection of mechanical structure is satisfying only to the mechanic. If it satisfies us, why use the Orders at all? The expression inherent in the structural masses of the building, before the Orders were applied, should be sufficient.

After all, what is it we would be at? We are artists, not mechanicians. Our aim is not perfection of structure, but perfection of expression. We may need one to obtain the other, but if we strive for perfection of structure it is not for its own sake, but simply as a means to perfection of expression.

I am well aware that in recognising the application of the Orders as an added decoration not structurally required, I have laid myself open to the charge of holding the now discredited theory that building and architecture are separate things—the architecture is the decoration you apply to a building, or, as I have lately seen it expressed, construction plus decoration equals architecture.

If I repudiate the suggestion now it is not so much from the desire to forestall criticism as to direct the discussion to more profitable issues.

"Old, Unhappy, Far-off Heresy."

But, after all, there is something in this point of view—there generally is in every point of view—even, I trust, in mine. To me, this old, unhappy, far-off heresy, which is treated to-day with so much contempt by our superior persons, was but a superficial way of expressing a partially comprehended truth.

The artistic expression that is inherent in the lay-out and grouping of the structure not being recognised or understood, it was natural that the whole of the ex-

pression in the finished building should be thought to be entirely due to the shaping or decorating of the structure which takes place when we proceed to intensify and complete an otherwise imperfect expression. The Orders which we may happen to use for this purpose are not in themselves the architecture. They do not create the artistic effect; they only serve to perfect it; and in so doing they seem to me to fulfil a function.

CORRESPONDENCE.

Responsibility for Dry Rot.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your very valuable article on the above subject in your issue of February 22nd suggests the necessity of some joint action between architects and builders, with the object of arriving at some definite understanding as to what should constitute reasonable responsibility on the part of either architect or builder for the outbreak of dry rot. I am of opinion that "dry rot," like consumption, is largely a preventable disease, and that where proper health conditions exist, pine timbers will last hundreds of years.

The suggestion in your article of the possibility of dry rot being held as a good reason for the architect withholding his final certificate is enough to send a cold shiver down the back of every builder in the country. Builders already suffer enough from the endless amount of reasons adduced for delay in making the last payment. I have in my mind a case of recent occurrence where a house has been occupied more than two years, and over £450 is still owing, the owner urging as a reason for non-payment that the w.c. cistern sometimes overflowed, and the slopstone wastepipe leaked. This sort of complaint, however, can soon be put right. But if "possible dry rot" is going to be brought into the category of excuses for delay in final payment, that, surely will be the straw that breaks the camel's back. Although it would perhaps be injudicious to contradict your statement that "all that is humanly possible may be done to prevent dry rot, and yet it may occur," I know of no instance in which it has occurred where proper precautions have been taken to prevent it. I mean, of course, in a new building. Where, however, a new wing has been added to an old building, I have known the fungi to come through an old brick wall and attack the new floors. I have also known dry rot to occur through the leakage of water-pipes; but these are accidents, and cannot generally be held as arising from the fault of anyone. Usually preventive measures are a question of £ s. d., and frequently risk is run to save the building owner the cost of these.

To start the disease of dry rot, two things are necessary, "the seed" and "the soil," in other words, the germs of fungoid life, and the conditions under which the germs can grow and propagate. The germ is subtle and often difficult to discern, but the conditions under which the germs can breed and thrive are fairly well known. To keep up the medical metaphor, the disease will spread under septic conditions, but will die under antiseptic conditions. Hence the necessity of getting to know from some accepted and reliable authority the antiseptic conditions under which healthy timber can be considered reasonably safe and immune from the attack of dry rot.

Another very important matter raised in your article is the responsibility of the

clerk of works, so far as he represents (which to a certain extent at least he always does) the architect and the owner. He may or may not possess personal authority to give orders on his own initiative; but, unless there are specific instructions to the contrary, builders generally look upon the clerk of works as the mouthpiece of the architect and owner.

Should a builder refuse to take orders from a clerk of works unless these are confirmed in writing by the architect? This refusal would very often lead to much friction, and would tend to make things uncomfortable for the builder during the whole progress of the work; more especially should the clerk of works be a man of strong will and one who magnifies his office. It is really necessary for the security of the architect as well as the builder that in all building contracts the scope and limitation of a clerk of works' duties should be clearly defined, and should he overstep his authority as a servant of the owner, his employer should be just as responsible for him as other employers are responsible for the actions of their servants. As a rule, there is generally no definite understanding as to how much authority the architect or owner delegates to his clerk of works, and unless that is fully known to the builder, his position is to a great extent an untenable one—not knowing when to take or refuse his orders, and not knowing how far he is being inveigled unto unknown responsibility. **GEORGE MACFARLANE.**

Stresses in Angle Cleat Rivets.

SIR,—Having frequently endeavoured to solve the stresses in riveted connections, I find Mr. Andrews's method (p. 123, February 1st) interesting, but by no means convincing. Why does he choose the centre of gravity of the rivets as the point about which the cleat tends to revolve?

In his Fig. 1, p. 123, the force W_3 should, I think, be an upward force, rotating in the direction opposite to the force P ; this makes the resultant R_3 almost zero. The position of this rivet could be slightly altered so that the resultant becomes zero. Being zero, the rivet may be omitted. Omit the rivet, and the centre of gravity of the remaining rivets is moved, considerably altering their stresses. According to Mr. Andrews's theory, the moving of the position of a rivet altering its stress from say .002 of a ton to .001 ton has practically no effect on the other rivets, but if its stress be altered from .001 ton to .000 the remaining rivets suddenly have great alterations in the direction and magnitude of their stresses.

I think Mr. Gillett (p. 193, February 22nd) is correct about the single rivet connection. The bolts are on the supporting girder, and the rivet is on the supported beam, and the tendency to permit "turning" is an advantage, as it offers no resistance to the beam taking its natural deflection. Plurality of rivets introduces moments which are difficult to determine, and which are due to the tendency of the supported beam to deflect, as well as the force P .

D. W. R.

[D.W.R. wishes to know why the centre of the gravity of the rivets is taken as the point about which the cleat tends to revolve in my article on "Stress in Angle-cleat Rivets." The reason is the same as for taking the neutral axis through the centroid in ordinary beams; it follows from the assumptions involved. I did not suggest in the article that the method was invented by myself; the general method is quite old, and will be found in a large number of American books on structural design under the name "Secondary

Stresses." D.W.R. says that he thinks Mr. Gillett right about the single rivet connection; so he is as far as he goes. One large rivet would do theoretically, and would be the best connection, but practice condemns it. I am sorry that, as D.W.R. suggests, there is a draughtsman's error in Fig. 1 of my article. W_3 should be upward, or else F_3 downward.—**EWART S. ANDREWS.**]

Lighting for Small Country Houses.

SIR,—I was much interested in your article appearing in this week's issue on "Lighting for Small Country Houses," by Clyde Young, F.R.I.B.A., but I find that your contributor's data on acetylene are not quite correct, and I should like to trespass on your space to point out what I consider a discrepancy.

Mr. Young states that "acetylene costs 11d. per 1,000 c.p. hours." How he arrives at this I do not know. For instance, calcium carbide at present works out at a cost of 1½d. per lb., or 14s. per cwt. delivered. The British Acetylene Association stipulates in its regulations that carbide sold commercially must yield a minimum of 4.8 cubic feet per lb., and 1.50 c.p. burner consumes approximately 1 ft. per hour. Therefore, if 50 c.p. consumes 1 ft. per hour, 1,000 c.p. will consume 20 ft. or about 4½ lbs. of carbide, which equals 6½d. per 1,000 c.p. hours.

Also with regard to piping, Mr. Young states that piping of small dimensions can be used for both air gas and acetylene, but on enquiry he will find that air gas takes much larger piping than acetylene.

Beckenham. **GEO. H. BENNETT**

[I do not doubt your correspondent's statement that acetylene gas can be produced at 6½d. per 1,000 c.p. hours. The installation of which I have personal experience, however, works out to within a fraction of the figure given. Since reading his letter I have turned up some makers' catalogues, but have not found any quotation as low as the one he gives; probably he has not taken into consideration 4 or 5 miles' cartage, which is frequent for the country. With reference to his remarks on piping I cannot agree with him that large pipes are necessary for air gas. As a matter of fact some systems of petrol gas lighting use 3 to 5 mm. pipes.—**CLYDE YOUNG.**]

THE PRESERVATION OF ANCIENT BUILDINGS.

On March 1st, at the Manchester Society of Architects, Mr. W. A. Forsyth, F.R.I.B.A., read a paper entitled "Notes on the Preservation of Ancient Buildings." The lecturer opened by remarking that the preservation and restoration of old buildings is an important subject for the attention of architects. When the opportunity occurs, architects may not always be ready or skilled in the treatment of the problem. Conservative methods are at all times necessary; imported material is always unhappy, and native material invariably satisfying.

The principles that should be observed in the renovation of an average village church or manor house were detailed. Restoration should have enduring qualities. All works should be given ample time in execution. Accurate drawings of the building should be made, showing all the irregularities; and he advocated the use of freehand drawings. A ruled plan cannot be accurate. The specification should be complete in every detail, and photographic records are valuable. Tenders should be avoided. He knew of no more satisfactory method than a 10 per cent. profit arrangement.

Coming to the actual operations, Mr. Forsyth dealt in turn with each part of the work. Rubble walls, he said, are largely misunderstood to-day. It is usual to point them, but as a rule no pointing is required, except in the dire extremity of the solid materials having become loose. The difficulty of making either plastering or pointing adhere to rubble is not realised. There are three distinct schools in the preservation of stonework to-day. The first might be called the "Limewashers." There is strong sentiment amongst them, against attempting to repair in the actual form and material of the original; if a stone mullion is crumbling, it is repaired with brick or tiles, and the place smeared over with mortar. They are anxious that their patching should reveal itself for all time. To a certain extent this school is justified by the glaring results of the second, the "Replacers," whose entire creed is to "cut out and replace with new to match." The third school is that of the "Fakers," whose delight is to deceive, and to remove all evidence of renovation. It is difficult to say which process is the most desirable. Mr. Forsyth proceeded to give instances of each method. At Westminster, a great work of "Limewashing" is being carried out, the decay of the stone being arrested by the application of limewash; some colouring is utilised to assimilate the applied material to its environment.

The use of the same methods of construction as obtained in the original building was advocated, such as the cutting of the mouldings on groin ribs in situ. After dealing exhaustively with the use of wrought-iron tie-rods, Mr. Forsyth spoke of the treatment of roofs. Machine-made tiles should be entirely excluded. English oak, he said, is the only timber. In repairing old roofs, all work should be done in position, to avoid the taking down of old rafters, tie-beams, and purlins. Old seasoned material should always be employed. **J.T.H.**

HYDRAULIC DERRICK CRANE FOR CONTRACTORS.

The hydraulic derrick here shown has been constructed to raise loads of 25 cwt. or three tons (with proportionate consumption of pressure water) through a height of 120 ft., to luff in or out between 50 ft. maximum and 16 ft. minimum rakes, and to slew through about three-quarters of a circle. The working pressure is 700 lbs. per square inch.

The lifting and luffing cylinders are placed vertically in the structure immediately below the crane mast, and the slewing cylinders are placed horizontally at the foot of the mast, the chains coiling in opposite directions around a drum secured to the mast pivot casting.

The lifting, luffing, and slewing cylinders are of the multiplying sheave type, the lifting cylinders having a multiplying power of 6 to 1, and the luffing and slewing cylinders a multiplying power of 2 to 1.

The pressure water consumed is about 100 gallons per operation, lifting the full load of three tons through the full height of 120 ft.; 26 gallons for luffing in through the whole range, and 3½ gallons to slew through three-quarters of a revolution.

The controlling valves are placed in a convenient position on the platform near the foot of the mast, and each is operated by a separate lever, so that the three controlling valves are independent of each other, and the motions can be made separately or together, as required. The makers are the Hydraulic Engineering Company, Chester.

LONDON MASTER-BUILDERS' ASSOCIATION.

Annual General Meeting.

The annual general meeting of the above association was held in the Council Chamber at Koh-i-Noor House, Kingsway, on Monday, February 27th, the President, Mr. L. Horner, occupying the chair,

The minutes of the last general meeting having been read and confirmed, the annual report of the Council was received and adopted.

The accounts and balance sheet for the year ending December 31st, 1910, were received and adopted.

The following officers were elected for the ensuing year:—President, Mr. G. Bird Godson; Senior Vice President, Mr. James S. Holliday; Junior Vice President, Mr. Walter Lawrence; Junior Treasurer, Mr. W. F. Wallis, J.P. The following gentlemen were elected to serve on the Council:—Messrs. W. Downs, T. Hall, J. W. Jerram, E. D. Pratt, H. Smith, F. Thorne and F. J. Walton. Mr. C. F. Kearley was elected Hon Auditor.

The President, having acknowledged the honour conferred upon him, proposed a hearty vote of thanks to Mr. Leonard H. Horner, the retiring President, for the admirable manner in which he had conducted

the business of the Association during the past year.

An interesting discussion took place respecting a universal week's holiday for the trade. The President opened the discussion, remarking that, though he admitted that no hard-and-fast rule could be laid down, as some firms might have urgent work in hand which it would be impossible to leave dormant for a whole week, it was undeniable that business in a builder's office was more or less disorganised through the summer months by one or more members of the staff being away for holidays. Whether it was the chief clerk or the office boy, each added his proportion to the disorganisation. His suggestion for remedying this dislocation of business was to close all works for the first week in August. The majority of works in progress are already closed from mid-day on the Saturday before the Bank Holiday until the following Thursday morning, leaving a total number of only 23 hours to be subsequently worked to complete the week. By closing down for the whole six days, opportunity would be given for half the staff to take their vacation during the last week in July and the first week in August, the other half commencing on the Saturday before Bank Holiday. By this means, where a fortnight's holiday is the rule, the whole of the holidays are

got rid of in three weeks. It was further contended that if this system were adopted it would be greatly welcomed by the merchants, possibly by architects and surveyors, and it would also give an opportunity for the outside staff to obtain a week's rest, which, under the present system, they do not get. The matter having been discussed, it was referred for the Council to deal with.

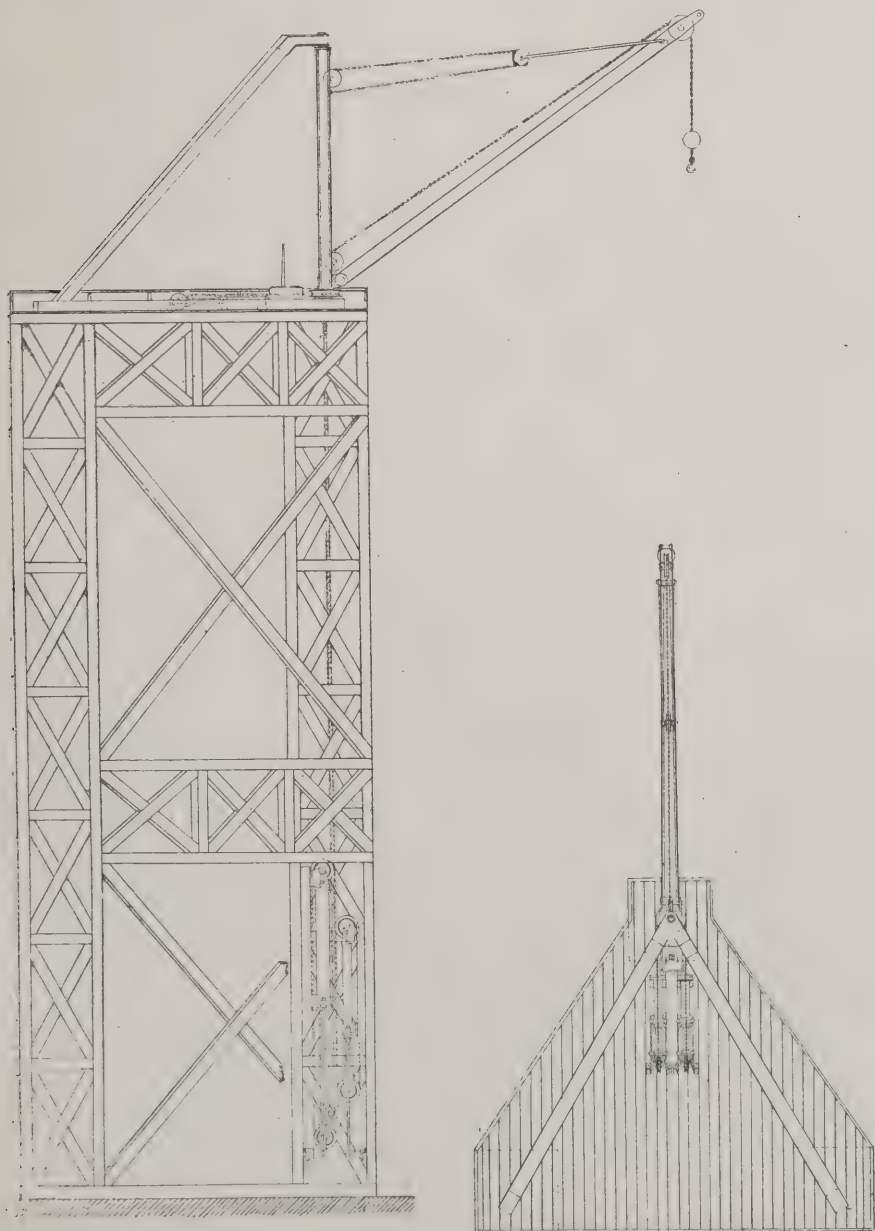
CUTTING STEELWORK WITH THE OXY-ACETYLENE FLAME.

In the course of the alterations which have been carried out for the Institution of Electrical Engineers in their new home on the Embankment, under the direction of Messrs. H. Percy Adams and Charles Holden, architects, it was found necessary to cut through a girder 6 ft. deep, which operation was accomplished with the oxy-acetylene blow-pipe in two hours. This is stated to be the first application of the process to work of this kind in London. The method, however, is not new in America. A case in point is the Gillender building in New York, where twelve built-up steel stanchions were cut off and other similar work done by an oxy-acetylene flame. The average speed of cutting with this flame is one 24 by $\frac{1}{2}$ -in. plate in one minute, but on heavy solid steel a speed as great as a 4 $\frac{1}{2}$ by 4 $\frac{1}{2}$ -in. section in one minute has been attained. The gas mixture, proportioned 1.28 oxygen to 1 acetylene, is delivered through the nozzle of a special torch, and makes a very slender flame developing 6,300 degrees of heat. The aperture in the nozzle varies with the thickness of the metal to be cut: for the work at the Gillender building it was about 1-64 in. diameter. The flame is applied to the cutting line and when its temperature is raised to a cherry red a pure oxygen jet is applied at the same point through an auxiliary independent nozzle, rapidly oxidising the metal, making a smooth deep cut about $\frac{1}{8}$ -in. wide. The torches are made of brass pipes, and fittings are very light and convenient. They are fitted with five sizes of nozzles provided for a considerable variety of work and enabling very complicated cuts to be made.

GLASGOW INSTITUTE OF ARCHITECTS.

At the annual meeting of this Institute, held on Wednesday last, the 43rd annual report was presented, in moving the adoption of which the president referred to several matters of general interest. Speaking of architectural education, and the old regime of regular apprenticeship, he said the problem before them was to associate office requirements with the advantages of a more academic training. He himself was a strong believer in the usefulness of the regular office routine of apprenticeship, and was somewhat sceptical as to the advantage of testing youths in the design of a palace before they even knew the common width of a door or the height of a stair step, but he was also fully aware that much could be done, and should be done, to improve on the existing system.

On the subject of competitions the president said there had been a wide range of selection during the year, from such as the Usher Hall and Queen's College, with excellently arranged conditions, down to the other end of the scale—or rather, beyond any scale at all—such as New Cumnock Church. To secure a better state of things, however, it was necessary for the improvement to come from architects them-



HYDRAULIC DERRICK CRANE.

selves rather than by bringing pressure to bear on competition promoters, for so long as there were architects who offered designs under the most unreasonable conditions, so long would committees and other unknowing people take the profession at its own estimate.

CENTRAL RECRUITING DEPOT.

The Architectural Association third spring visit to the Central London Recruiting Depot and Stables, Great Scotland Yard, took place on Saturday last. The buildings have been erected to replace St. George's Barracks and Stables, belonging to a private owner, both of which are shortly to be pulled down to allow for extension and fire protection in connection with the National Gallery.

In constructing the building, concrete piers have been sunk to a distance of about 20 ft. below the level of Great Scotland Yard. The design is of Georgian character, quiet and dignified. The colour of the exterior is particularly pleasing, purple grey Crowborough stocks being used for the facings, a salt glazed brick plinth, gauged red brick arches, aprons and quoins, and Portland stone cornice key-stones, etc. The ground floor windows have bold Portland stone architraves. Westmorland green slates are used for the roof; window sashes are painted white, doors green.

The plan of the Depot is a square, with a centre court from the ground floor upwards. The court on the ground floor, used for assembling recruits, is covered with a roof of wired glass. The building is of fire-resisting construction, floors formed of steel joists encased in breeze concrete. The interior is of the simplest character, glazed brickwork being used to a great extent for wall faces. Skirtings for the greater portion of the building are dispensed with. Cubicle and dressing-room floors are covered with "Eubœolith," on account of its non-conductive properties, laid direct on to concrete without a screeded face. Maple blocks are used for most other floors throughout the building.

The building is heated by radiators supplemented by coal fires. The radiators are fixed to brackets in wall, keeping them off floor for sweeping purposes. In the basement 10 bath cubicles are provided for recruits; water is turned on with a key from corridor outside, thus checking the supply. Barber's shop, great-coat store, disinfecting chamber, boiler house, and lavatories occupy the portion of basement used by Recruiting Depot. Accommodation is also provided for a reserve force of the Metropolitan Police, and a large store is set apart for the use of H.M. Office of Works.

On the ground floor on the right and left of the main entrance are the recreation and coffee rooms, in front the court having kitchen on the left. The kitchen walls are of glazed bricks. A Warren Army pattern cooker takes up very little space, but cooks for 145 men. A large scullery adjoins, with larder and store.

On the right of the court is the guard room, with prisoners' cell, and across the court, with a frontage to Craigs Court, are the inspection room, preliminary examination room with dressing boxes, and dentist's room.

On the first floor are the attestation room, sergeants' mess, and cubicles for recruits. Second floor, commanding officer and staff, and more cubicles.

On the third floor are the quarters of the sergeant-major, pay clerk, staff-sergeant, and canteen-sergeant. The quarters comprise

four separate flats, that of the sergeant-major being slightly better than the others. The flats have kitchen, scullery and offices, living room and two bedrooms—three in the sergeant-major's.

The rooms are well lighted and of good size, looking out on a balcony running round a central court. Cubicles are provided on the remainder of this floor and fourth floor. The flat portions of roof are formed of concrete covered with asphalt. A rifle range will probably be provided on the roofs.

The stables adjoining are built of similar material, and have been designed to harmonise with the Recruiting Depot. Owing to the limitations of the site, horses are accommodated on the first floor, which is reached by a sloping way 7 feet wide leading on to a rubber paved gallery. Seven stalls and 14 loose boxes are provided; stable floors are paved with adamantine paving clinkers. Caretakers' quarters, mess room, kitchen for grooms and head coachman's quarters occupy the second floor, and on the third floor are the cubicles for grooms, bathrooms, lavatory, cleaning rooms, and head groom's bedroom.

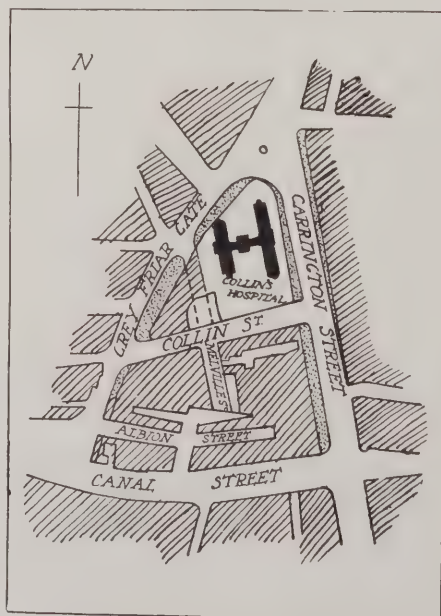
The ground-floor accommodation comprises coach-house, harness and steel rooms, loose box, and covered washing space. The fittings are of the most modern type.

The architect is Sir Henry Tanner, and the builder Mr. J. Dorey.

The party was conducted by Mr. D. N. Dyke, A.R.I.B.A., of H.M. Office of Works, who has had charge of the building.

A NOTTINGHAM IMPROVEMENT SCHEME.

The plan reproduced below shows the alterations which are now being carried out in Carrington Street and Grey Friar Gate, Nottingham—alterations that have been under discussion for some years. When they are completed the city will be in possession of two fairly broad streets instead of two narrow and inconvenient ones. Carrington Street is one of the busiest thoroughfares in Nottingham, being the approach to the Midland Railway Station, as well as to the large district in the south, including West Bridgford, and to Trent Bridge. It has been inconveniently crowded for years past, and several serious accidents have occurred in consequence. The cost of



the scheme will be at least £37,000. Not only will the two streets be widened, but some very poor property will be cleared away and replaced by buildings of a better character, so that the ratable value of the city will be increased; while its appearance will be much improved. Carrington Street will be made 70 ft. wide instead of 50 ft., as at present, and Grey Friar Gate will be widened from 35 ft. to 60 ft. On the accompanying plan the additional areas to be included are shown dotted.

THE LATE MR. FREDERICK SHIELDS.

We regret to record the death, in his 77th year, of Mr. Frederick Shields, who was an Associate of the Royal Water-colour Society, but was known rather as a decorative artist than as a water-colourist, and had the good fortune to carry out, at the chapel built by Mrs. Russell Gurney at Hyde Park Place, the largest piece of interior wall decoration that has been executed in London since Barry, in the eighteenth century, painted the walls of the meeting-room of the Society of Arts in the Adelphi. The erection of this chapel, with its quiet Romanesque façade standing back a little from the Bayswater Road, and contrasting so strongly with the noise and traffic of the road, was a beautiful idea; and the commission to an artist to paint the interior with sacred pictures, which should speak to the souls of those who sought repose within the building, was an undertaking with which one must feel a sincere sympathy. The task was a great one, on which Shields seems to have spared no pains; indeed, the mere extent of wall-space covered is remarkable as the work of one man. One can hardly say, it is true, that the work is of the first importance from an artistic point of view; Shields was not a Puvion de Chavannes; but it is sincere work done with a sincere aim, and will appeal to many to whom the representation of sacred scenes, and their symbolical significance is of more interest than questions of colour or of decorative style. One can only wish that such an experiment were oftener undertaken in London.

OUR PLATE.

The photograph reproduced as a centre plate in this issue shows the north pavilion forming a section of the completed scheme approved by the Office of Woods for the rebuilding of the portion of Regent Street between New Burlington Street and Conduit Street. The architect is Mr. Frank T. Verity, F.R.I.B.A., and the contractors are Messrs. Allen and Co., of Westminster. The carving work has been carried out by Messrs. E. J. and A. T. Bradford, and the cast-iron window frames by Messrs. Walter Macfarlane and Co., of Glasgow.

A New F.S.A.

Mr. Sydney D. Kitson, M.A., F.R.I.B.A., of Leeds, has been elected a Fellow of the Society of Antiquaries.

Memorial to G. F. Watts.

In the cemetery at the village of Comp-ton, in Surrey, Mrs. G. F. Watts, widow of the famous Royal Academician, unveiled last week a memorial to her husband. It takes the form of a cloister 9 ft. long by 7 ft. wide, carried out with interlacing arches of brickwork. In the centre is a recumbent figure of Mr. Watts, the work of Mr. Thomas Wren, of Comp-ton.

IN PARLIAMENT.

(By our own Gallery Representative)

Mineral Rights Duty.

Mr. Hobhouse has informed Mr. Younger that mineral rights duty is charged upon royalties received in respect of granite and whinstone, but not upon royalties received in respect of freestone. As to the grounds of distinction, freestone falls within the exemption conferred by Section 20 (5) of the Finance Act, 1910, while granite and whinstone do not.

Amendment of Housing and Town Planning Act.

Mr. William Bull asked the President of the Local Government Board whether he would state how many local authorities had now represented to the Board the expediency of amending the Housing and Town Planning Act 1909 by substituting a judicial tribunal under the Act, and whether certain bodies had expressed their dissatisfaction with the appeal procedure of the Board.

Mr. John Burns, in a printed answer, stated:—"Representations to the effect mentioned have been received by the Local Government Board from 32 local authorities out of over 1,800 such authorities in England and Wales. I am aware that the 32 local authorities referred to include the nine Metropolitan borough councils named and also the borough council of Greenwich, and that the Camberwell Borough Council have also expressed some dissatisfaction in regard to the method of procedure adopted in connection with appeals to the Board under the Act of 1909. Out of the 32 local authorities who have made representations, not one has had any experience of the Board's inquiries into appeals under the Act of 1909, nor do I find that these authorities have any special claim to be heard in this matter, based on action taken by them under the Housing Acts. According to the returns furnished to the Board, under Section 44 of the Housing of the Working Classes Act, 1890, for the years ended 31st March, 1909, and 31st March, 1910, no closing orders were made by the 10 metropolitan borough councils mentioned in either of those years, and only three of that number report any action under Part II. of the Act of 1890 in the same years. Of the 22 provincial authorities included, eight authorities report no action in either of those years under that Part of the Act of 1890, and only four of the same 22 authorities made, or obtained from the justices, any closing orders during those years."

COAST EROSION.

At an ordinary meeting of the Society of Engineers, the paper read was "Coast-Erosion," by W. T. Douglass, M.Inst.C.E.

It was pointed out that the coasts subject to erosion are mainly those consisting of friable cliffs, and low-lying lands. Where the coast-line is constituted of hard rock the problems connected with erosion do not occur. The erodible shore is to be found, therefore, on the east and south coasts of England, principally between Berwick and the Start Point.

The means for effective coast-protection are sea-walls and groynes, not separately but in combination, though a natural storm-beach is the ideal bulwark. A wall as the sole defence of a friable cliff is invariably undermined. Groynes are effective in proportion to their length. Their spacing must depend on circumstances, but the main consideration which should

govern decision as to the distance apart at which groynes are built is the obliquity of the prevailing impinging wave on the foreshore. Groynes require a sea-wall as an adjunct, since, without it, material accreted by them is liable to be carried around the shoreward ends by an abnormal high tide, when accompanied by a storm of great violence. The total quantity of beach-material travelling on the foreshores is not sufficient for the defence of all of them.

THE LIVERPOOL MEMORIAL TO
KING EDWARD.

The discussion over the above memorial still continues. A petition is being presented to the Lord Mayor and Corporation urging that St. George's Hall, "which in its present condition is recognised as a complete and perfect example of its type of architecture," should not have its main lines in any way altered, by the introduction of steps or otherwise, in order to provide a site for the memorial to the late King.

Professor Reilly, in view of the rumour that the Finance and Memorial Committees intend to persist in their proposal, restates below the points which have most clearly emerged from the controversy:—

1. The podium wall as it stands was erected after the deaths of both Elmes and Cockerell.

2. It was built after a number of schemes and experiments for providing a mode of access from St. John's Lane to the south front had been suggested. One of these schemes was actually carried out, but discarded by Cockerell in 1860, three years before his death. A drawing for the podium as it now exists was made by him in that year, and is practically identical with Elmes's first intention.

3. It is not known who actually constructed the present podium wall—prob-

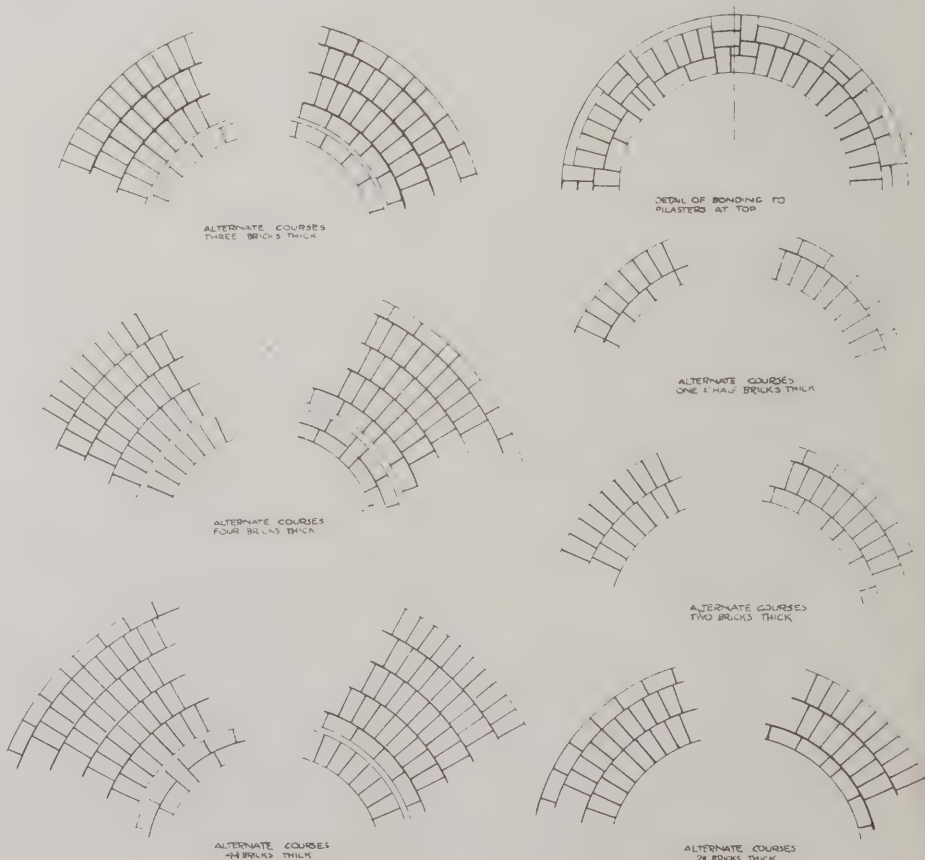
ably the city surveyor at the time—but the important point is that in doing so he carried out what was to all intents and purposes Elmes's first arrangement and Cockerell's drawing of 1860.

4. Elmes designed the podium as an unbroken wall for two reasons—first, because a great flight of steps was rendered impossible by the nature of the site; second, the position of the Criminal Court immediately behind the south door made the use of the latter as a main entrance impossible. In these circumstances, the effect aimed at was one of remoteness, similar to that achieved by the placing of the Parthenon on the sheer cliff of the Acropolis.

Since the south elevation as we now see it represents Elmes's first inspiration, and as all attempts to overcome the difficulty of providing a south approach have proved aesthetically unsatisfactory, can we now reasonably venture to engage in similar experiments with the certainty of failure before us?

DESIGN FOR A TALL CHIMNEY
SHAFT.

The accompanying drawings were awarded the second prize in a competition for a chimney shaft 120 ft. high, held at the Municipal School of Art, Leicester, some time ago. The design, which is by Mr. A. R. Widdowson, A.R.I.B.A., represents an attempt at the more architectural treatment of the tall chimney without in any way sacrificing anything of its essentially utilitarian character. The circular plan has wisely been adopted as affording the most practical solution of the constructional difficulty of resistance to wind pressure. The drawings, being self-explanatory, call for no detailed description. The smaller drawing illustrates the bonding of the brickwork courses.



DESIGN FOR A CHIMNEY SHAFT 120 FT. HIGH: DIAGRAM SHOWING BONDING OF BRICKWORK COURSES.

COST OF SCHOOL BUILDINGS.

DEPARTMENTAL COMMITTEE'S REPORT.

As a considerable stimulus to school-building is likely to ensue on the report of the Departmental Committee, the following extracts from that report should possess much practical value and interest.

IN February, 1910, a Committee was appointed by the President of the Board of Education to enquire "(a) Whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present; and, if so (b) what steps should be taken to facilitate the adoption of such materials or methods and whether any alteration in the law is required for the purpose." The Committee was constituted as follows:—Mr. L. A. Selby-Bigge, C.B., Principal Assistant Secretary of the Elementary Education Branch of the Board of Education (chairman); Mr. N. T. Kershaw, C.B., Assistant Secretary of the Local Government Board; Mr. F. Clay, Architect of the Board of Education. Mr. J. G. Milne, Senior Examiner of the Board of Education, acted as secretary. The report was issued on February 22nd, and a résumé of its recommendations was given at p. 225 of last week's Journal.

The Committee held sixteen meetings and examined thirty witnesses. They also visited buildings at Anerley, Ipswich, Bordon Camp, Harrow, Borstal, and Windsor, to investigate novel methods of construction. They communicated with the councils of the R.I.B.A., the Royal Sanitary Institute, the Land Agents' Society, the Surveyors' Institution, the Quantity Surveyors' Association, the Institute of Civil Engineers, the Association of Municipal Corporations, and the County Councils Association; and also with the War Office, Admiralty, and Home Office. Enquiries were addressed to 141 Education Committees, of whom fifty-five had the grace to reply.

The "Useful Life" of School Buildings.

The problem involved in the enquiry is thus stated:—

So far as the cost of school buildings depends on their solidity of construction and the standard of durability which the architect adopts, it is proper in the first place to consider what is the expectation of "useful life" for which an architect should allow in designing them, and how far it is possible to make their "structural" coincide with their "useful" life. It is, of course, obvious that the standards of ventilation, lighting, heating, sanitation, and general comfort have risen very greatly during the last 25 years. It is also well understood by all experts that methods of instruction, classification, and staffing have undergone a process of development which amounts to little less than a revolution, and that, generally speaking, the way in which the buildings of a good school are used, and the purposes which they serve, are altogether different from those which were in vogue not many years ago. Comparatively modern buildings have thus become old-fashioned, and it is a matter of common remark, and indeed of complaint, that buildings erected not long ago, which are still quite sound structurally, have to be extensively altered or completely remodelled, in order to adapt them to the organisation of an up-to-date school. Although it may be expected that the changes in school organisation and in the standard of school hygiene and comfort

will not be so extensive and rapid in the future as in the past, it would be rash to suppose that the process of hygienic and educational development has nearly reached its limit, or that this process will not continue to modify the planning of school buildings. In designing school buildings, therefore, the architect cannot afford to overlook the possibility of their being remodelled or even abandoned at some future date which will involve some waste or sterilisation of capital expenditure. He will therefore plan his buildings on the simplest possible lines, so as to facilitate alteration of the internal arrangements. He will also recognise that the degree of durability and immunity from repairs at which he may legitimately aim is limited, that it is not good practice either from an educational or from an economical point of view to make school buildings as solid or durable as warehouses or churches, and that so long as his building will be warm, weather proof, and inexpensive to maintain during the period of its useful life, he is at liberty to make some sacrifice of durability to saving in first cost.

In localities where, owing to the nature of the ground, it is practically impossible to secure a stable foundation, or where (e.g., by the extension of mining operations) the support of the buildings may be withdrawn, it is essential not only to reduce the weight of the building to a minimum and to modify its construction, but also to avoid any unnecessary expense in erecting it, since it may be rendered uninhabitable at a comparatively early date.

Where, moreover, the population is of a shifting or exceptional character, and it is uncertain whether any school or so large a school will be required in the locality after a limited period of, say, 15 or 20 years, something between a permanent and a temporary building is wanted. The demand for such a building arises not only in mining and other industrial districts, but also in towns where the working class population is gradually moving out to the suburbs, but where, pending the completion of the process, there is urgent need for new school buildings in the older and central districts. The ingenuity of school architects may well be directed to find a satisfactory type of semi-permanent school building which shall be cheap to erect, inexpensive to maintain, cool in summer, and warm and dry in winter. There is reason to believe that there are a good many cases in which it would be prudent for the Local Education Authority to propose and legitimate for the Board of Education to approve the erection of such buildings in which durability is treated as a matter of secondary importance.

The purely temporary school building is almost invariably, from an educational point of view, much superior to any permanent building designed for other purposes which is pressed into the service of education. It is, however, at best an expensive and unsatisfactory device, only justifiable in cases of emergency or to meet a sudden growth of population, and the scope for the use of it appears to be diminishing as Local Education Authorities catch up with the arrears of school supply which confronted them after 1902.

In this Report, therefore, the suitability of various methods and materials submitted was considered from the point of view of the "useful life" which may be assigned to permanent or semi-permanent school buildings.

Circumstances Affecting the Cost of Elementary School Buildings.

It is generally admitted that there has been a very material increase in the cost of erection of school buildings in recent years. Evidence on this point was submitted by architects who have been continuously engaged in the work of planning schools, in some cases for nearly 40 years; and it would appear that while in the period immediately following the Elementary Education Act of 1870 it was found to be possible to provide schools in most localities at a cost of £5 or £6 per place, the cost of a modern permanent school erected under favourable circumstances according to ordinary modern practice cannot be put much under £10, and a reasonable estimate for an ordinary building designed with due regard to economy would range from that figure up to £13 10s. per head, according to the provision made for halls and instruction in domestic subjects and manual work.

This increase of cost is due, to a very large extent, to conditions which are not under the direct control of the Local Education Authorities. Reference has been made to the rise in standards of comfort and hygiene, and the development of educational methods, on which the Board of Education in their report for the year 1908-9 have laid considerable stress. A few of the ways in which this advance has most obviously involved greater expenditure are instanced. In 1870 it was regarded as sufficient if 8 square feet of floor space was provided for each child; the minimum requirement now is 10 square feet for children over about 8 years of age and 9 square feet for those under that age, while in the latter case a further provision of free space for exercises has to be made: so that the mere superficial area to be covered has been increased by practically a quarter. The earlier type of school building, which survived in some places, with or without modification, for some time after 1870, was virtually a single room, where all teachers (the average of whose qualifications was low) and classes could be under the eye of the head teacher at the same time: it is now regarded as a matter of the first importance that every class should be taught in effective separation from its neighbours, and consequently the interior of the school must be subdivided into classrooms, and the position of a classroom for every class has become the rule in all new schools. Since the introduction of the classroom system, there has been a progressive movement in favour of a reduction in the size of classes, which involves still further subdivision of the building and multiplication of the areas of floor space not occupied by desks but required for the teacher, the blackboard, etc. At the same time, while classes have been segregated into separate rooms for teaching purposes, it has been found highly desirable to have a large room where all the scholars or several combined classes may be assembled; and so, when the single schoolroom disappeared in favour of class-rooms, additional provision had to be made in the shape of a "hall," the need for which has been more and more felt as the importance of physical training and exercises has been realised. Amongst more recent developments are noticed the wider recognition which is now given to the value of domestic and manual training, subjects

for which is required a certain amount of extra space and equipment beyond that sufficient for the purposes of the old elementary curriculum.

In general, local education authorities and their architects have kept well in advance of the minimum requirements of the Board of Education, and the arrangements necessary in order to meet the stricter requirements of the present standard of school hygiene have been even more readily adopted. The provision for heating, ventilation, and lighting of schools is in many cases almost double that which was regarded as sufficient thirty years ago; but every witness who has touched on these points has deprecated strongly any attempt to reduce capital expenditure by cutting down or omitting items which tend to secure more healthy conditions for the children under instruction.

A cause of increase in cost which is clearly beyond the control of the local education authorities lies in the general rise of building prices. To a large extent this increase is due to a permanent rise in the cost of labour, but in other respects the cost of building is liable to fluctuation; at the present time there are slackness and severe competition in the building trade which have materially reduced the cost of school buildings.

It must be admitted, however, that local education authorities do not all or always practise in fact those reasonable economies which are really in their own power, or exercise sufficient self-control or self-restraint in the matter of the style and general character of school buildings. It may be admitted also that the liking for florid and pretentious elevations is less prevalent, and that the general improvement of the public taste is reflected in a greater appreciation of simple, dignified, and appropriate exteriors, from which decorative "trimmings" are absent. It still, however, is the case that local patriotism sometimes confuses modesty and simplicity with meanness, and demands a school building which shall not only not clash with neighbouring buildings, but shall form a striking feature of the district or by mere costliness enhance in popular opinion the dignity of the locality; and where district committees are allowed much influence in the selection of plans their influence is not infrequently conducive to extravagance.

In other cases local authorities or their committees are influenced by the laudable desire to have the best school building which money can buy, and submit to the Board of Education plans and specifications in which no item is conspicuously extravagant, but the highest possible standard is adopted in every respect; the result being a very spacious, durable, finely finished, and completely equipped building, costing a very large sum per scholar accommodated.

The Committee say that they have received no evidence which indicates that a local education authority is justified in adopting any such sum as £20 per head of accommodation as the standard by which to estimate the cost of ordinary school buildings which do not contain a large number of special or supplementary rooms.

The cost of school buildings largely depends on the number and character of the special rooms which are provided over and above the essential minimum of classrooms, cloakrooms, offices, etc.—such as "halls," rooms for instruction in wood and metal work, domestic subjects (cooking, laundry, and housewifery), drawing and elementary science, dining-rooms (for use by children who bring their own dinners or for meals provided under the Provision

of Meals Act), bathrooms, medical inspection rooms, and school libraries. It is obvious that from an economical point of view the question whether they can, or will, be used fully and continuously or only occasionally and spasmodically is one of the first importance. For instance, if the hall is so designed that it cannot be used for singing, physical exercises, etc., without disturbing the work of the classes in the classrooms (as is the case where classrooms are grouped round and open directly out of the hall), it is less likely that full use of the hall will be made for its proper purposes than if it is isolated or "insulated." It is still more obviously wasteful to provide a hall for special purposes and subsequently to fill it with desks and use it as an overflow room for the ordinary work of classes. Where, however, the hall is made the chief architectural feature of a block of buildings and is built with high thick walls and an expensive roof, the relation between expenditure and educational value which everyone desires to preserve becomes still more distant. As regards rooms for manual and domestic instruction, there is, the Committee believe, a tendency in the case of large schools to provide them in, or in close connection with, the school buildings, but there is also a tendency (which from the financial point of view must be welcomed) to make one special room serve several special purposes and to make the ordinary rooms also serve special purposes. Generally speaking, the tendency to provide an extra room for each special branch of work is less marked than it was a few years ago, and this is particularly the case with rooms for Art and Science. The Committee note with satisfaction the ingenuity with which many school architects are contriving to get the utmost possible service out of school buildings, and taking every opportunity of providing facilities for special branches of school work or for improving the health and physical condition of school children without appreciably increasing the total cost of the buildings.

The evidence indicates that the most economical buildings, considered in relation to their efficiency for educational purposes, have been provided by architects who have made a special study of school planning, either as the official architects of local education authorities or in the course of private practice. Good results have been obtained both where the permanent staff of a local education authority have designed schools and supervised their erection, and also where the work has been entrusted to an unofficial architect. On the other hand there are cases in which the employment of a local official whose principal duties are not those of an architect has led to results just as unsatisfactory as arise from the employment of an independent architect who has made no special study of schools. The Committee fully concur in the doctrine that the work of designing school buildings is, in fact, a highly specialised branch of the architectural profession, and that real economy can only be secured by a thorough acquaintance with the actual needs of schools in practice and the constant comparison of various expedients adopted to meet these needs, both in this country and abroad. On the other hand, so far as ordinary elementary school buildings are concerned, the evidence which has been received leaves the impression that competitions are as a rule a waste of time and money. It is claimed by their supporters that they not only give new men a chance, but promote progress and the introduction of new ideas. Unfortunately experience in this respect is paradoxical. Apart from personal and

other considerations which affect the number and quality of the competitors, it seems that originality is not conducive to success in competitions, even where the conditions of the competition allow of it, and that they result in the perpetuation rather than in the improvement of well-established models. Competitions also preclude discussion between the architect and his client while the plans are in a preliminary stage (a matter of special importance in the case of schools), and also render the subsequent modification of the successful and finished plans a difficult and sometimes an embarrassing matter.

In one respect the employment of a local architectural staff, or at any rate of an architect with local knowledge, may effect substantial economy. In certain cases, the specifications for school buildings have contained directions for the use of materials which had to be brought from a distance, when equally satisfactory materials could be obtained at a cheaper rate in the immediate neighbourhood of the site. It is obvious that, especially in respect of knowledge of local materials, as well as in connection with the special customs and tastes which prevail in many parts of the country, there are considerable advantages on the side of employing the man who has had practical experience of local conditions.

Detailed examination of the items in cases where thoroughly satisfactory school buildings have been provided at a cost below the average shows that *the reduction in expenditure has been obtained, not by any remarkable devices, but by a careful attention to small savings on numerous items.*

Actual Cost of Elementary School Buildings.

Not only is there a wide divergence in the actual cost of school buildings in different parts of the country, but the cubical content per unit of accommodation also varies considerably with different plans. As the floor space and height of classrooms are practically determined by the regulations of the Board of Education, this variation arises from and represents economy or waste of space in corridors, roofs, halls, and so forth. An examination of a number of typical plans shows that, while it is possible to design schools including central halls at a rate of 400 to 450 cubic feet per head of accommodation, it is by no means uncommon to find the amount running up to 500 or even 600 cubic feet per head. A school without a hall will contain from 300 to 350 cubic feet per head, according to the width of the corridors. Probably the difference in the cubical contents of buildings per head of accommodation is one of the most important factors in the wide difference in cost; and reference to this factor affords the best check on the planning and design of the building.

It appears that, in counties where bricks are cheap, such as Staffordshire, Derbyshire, Lancashire, etc., the main building can be reckoned at 4½d. to 5d. per cubic foot, to which about 1d. would have to be added to cover the cost of playground, offices, etc. A school, therefore, economically planned and erected, in a district where building is cheap, including a hall, out-buildings, playgrounds, etc., would cost, according to ordinary practice, from £10 (at, say 6d. for 400 feet) to £11 a head.

It may be taken that a school building with a suitable and sufficient provision of hall accommodation (say, a common hall for boys and girls and a smaller one for infants), but without any special rooms, should cost from 33s. 4d. to 37s. 6d. per head for every penny per cubic foot that a building of the school type may reasonably be expected to cost in the district, in-

cluding all work to make school and playground ready for occupation; thus:

Building at	per cubic foot	at 33/4	at 37/6
		£ s. d.	£ s. d.
6d.	=	10 0 0	11 5 0
7d.	=	11 13 4	13 2 6
8d.	=	13 6 8	15 0 0

These figures assume that there is nothing in the site or locality which would entail extraordinary expenditure, and, though they allow for halls, do not allow for rooms appropriated exclusively to special instruction.

In the case of a school to accommodate very small numbers, there is naturally a much wider range of cost, since a very slight increase or saving will make a great difference in the cost per head; but, as these small schools do not usually have halls, and the walls and roof can be kept low, it will be found that under favourable circumstances they can be built for a much lower figure than that given above, cases of schools recently built for £7 a head having been brought to notice.

The cost per head may be analysed more or less roughly in the following proportions. Taking a school for 320 "mixed" and 320 infants, erected in one storey and costing £10 17s. 9d. per head, it was found that the main structure accounts for £8 19s. 7d. per head at 4½d. per foot cube; offices and drainages 14s. 10d.; asphalted playground 10s. 8d.; and boundary walls 12s. 6d. Another case of a school for 156 costing £9 8s. 4d. per head gave £6 19s. 2d. for the main building at 5d. per cubic foot, 17s. for offices, £1 1s. 6d. for boundary walls, and 10s. 8d. for asphalted.

The cost of furnishing does not vary greatly, and can generally be reckoned at something between 10s. and 12s. per head. The cost of sites is naturally of too variable a nature to allow of any figures that would be much guide, on account of the wide divergence both in the local price of land and in the size of the playground.

Appendices to the report give the actual or estimated cost of a large number of schools recently erected or in process of erection in different parts of the country.

Novel Materials and Methods.

In the course of their inquiry into the use of novel materials and methods, the Committee found some difficulty in obtaining satisfactory evidence with regard to actual experiments in construction, as hardly any school architects have used any materials other than brick or stone, except for purely temporary buildings. So far as concerns school buildings, this has been ascribed by some witnesses to the fact that local by-laws do not as a rule admit of the use of other materials. In a large part of the country, however, there are no building by-laws, and in some of the areas which have by-laws provision is made for the use of other materials. The Building Regulations of the Board of Education allow a fair amount of latitude, but, by laying down definite rules for the thickness of walls, etc., they have no doubt contributed to the absence of experiment. Some, however, of the materials and methods described below might certainly have been proposed—one or two have in fact, been proposed to and accepted by the Board—for the erection of schools.

The evidence received is not sufficient to justify the recommendation of any particular materials or system of construction for general adoption, especially as local conditions would play an important part in determining whether economy could be effected in an individual case: but it seems highly desirable that local education authorities should make careful inquiries as to the methods best adapted to meet the needs of their own districts, and, if they can find

any scheme which appears to them to provide a satisfactory and economical school building for their own purposes, should submit it to the Board of Education.

The methods which have been proposed to the Committee may be roughly classified as follows:— (i) Steel Frame Buildings: (a) with thin solid curtain walls of concrete; (b) with hollow curtain walls of concrete slabs; (c) with curtain walls of brick, hollow or solid; (d) with curtain walls of patent materials; (e) with hollow curtain walls of expanded metal faced with cement and plaster. (ii) Reinforced brickwork. (iii) Ferro-concrete buildings. (iv) Brick buildings with solid 9-inch walls. (v) Brick buildings with thin hollow walls. (vi) Timber frame buildings with slab casing. (vii) Wooden buildings.

This classification is only adopted for convenience in dealing with this subject, and it will, of course, be understood that the various methods described are capable of combination in many ways.

Of the various forms of patented blocks used for forming the curtain walls of a steel or wooden framed structure, the Committee investigated one known as "Frazzi," which has been widely used. Particulars of two hospitals erected with this material at Windsor and Benenden, were furnished by Mr. William West, the architect, and the Committee visited the first-named under the guidance of a director of the Frazzi Company. In these cases the material is used to fill in a steel-framed structure, and is rough-cast on the outside. The building appeared to be satisfactory and was well spoken of by the occupants. The open-air school at Thackley built by the Bradford Corporation, of which Mr.

Kirkby, the borough surveyor, supplied particulars, is also erected in this material, being rough-cast on the outside and left plain on the inside, the surface of the block showing. The same material has been used for churches and private houses. An equally satisfactory building for school purposes could probably be obtained by the use of other hollow blocks or by means of hollow walls of brick or concrete. It would depend on local conditions which material would prove most economical. Mr. Fisher informed the Committee that he had obtained alternative estimates for a building in reinforced brickwork and in steel with Frazzi filling, and found the former slightly cheaper in the particular case, as bricks were cheap in the locality; but he would expect the difference to be on the other side and in favour of Frazzi where bricks were not readily obtainable. The director of the Frazzi Company supplied estimates from which it appears that, for the walls of an ordinary building, he claims that his system would effect a saving of about 40 per cent. as compared with brickwork.

Another patent slab known as the "Fram" is described in an account of the Harrow Sanatorium, and there seems to be no reason why others of the numerous forms of slabs used for internal partitions should not be used for external walling, if suitably treated to render them waterproof; but, unless the slab is itself hollow, it is desirable to have a double wall in order to secure an airspace.

A proposal has been submitted to the Board of Education for the erection of a school at Nacton, in East Suffolk, on a method which has been extensively employed for cottages on Captain Pretymann's



THE MARKET CROSS, CROSCOMBE.

estate. A steel framework is constructed, strengthened by cross-wiring, and this frame is filled in with expanded metal lathing on both sides; the outer side is faced with a layer of cement and rough-cast $1\frac{1}{2}$ ins. thick, and the interior with $\frac{3}{4}$ -in. of plaster, a cavity $6\frac{1}{2}$ ins. wide being left between the two sides; the lower part of the wall is built in brick up to the plinth level, or, in the case of a school, to the under side of the window sills. Cottages designed on this system have been visited, and the result appears to be satisfactory, and there is no reason to suppose that it would be unsuitable for schools.

In regard to steel frame construction generally, whatever form of filling may be adopted, attention has already been drawn to the fact that considerable economy would be effected in the space occupied by a school building, owing to the diminished thickness of the walls; Mr. Riley estimated the saving in area at 8 per cent. A further advantage common to all forms of steel framework, is the economy in foundations rendered possible by the lighter building; and on an insecure foundation a wall contained in a steel frame is certainly safer than a plain brick wall. On the other hand, all the forms of filling proposed require to be made weather-proof by a facing of cement rough-cast or a similar material; and Mr. Jacques suggested that there are objections to the use of rough-cast in a smoky atmosphere. It is obvious also that this method of construction calls for a special treatment of the elevations.

The general conclusions of the Committee were summarised at p. 225 of last week's issue.

CROSCOMBE.

The old-world village of Croscombe lies hidden away in a narrow valley which widens out towards the western side in the direction of Wells and Glastonbury. It consists of one long rambling street, with two turnings leading off northwards, between which stands the church.

This district of Somerset is rich in domestic remains, more especially those in the fifteenth century, and specimens more or less perfect are to be found in most of the towns and outlying villages. Croscombe has numerous examples, prominent amongst them being the old village inn, a fine and well-preserved specimen, with its picturesque stone bay window and carved stone ceiling. A very interesting old stone cross stands in the middle of the village, close to the "Rose and Crown," forming a conspicuous feature with its cavalry of three steps, sur-base and tapering shaft, all octagonal on plan, the total height being about 13 ft.

The village church is built of stone quarried in the neighbourhood, and consists of nave, chancel and side aisles. It was erected either in the reign of Henry VI. or early in that of Edward IV., although the south porch, north door and chancel arch are remains of a more ancient building. The interior is altogether pleasing and beautiful. The aisles extend beyond the sides of the chancel, forming two chantry chapels, the one on the south side being the De Paulton Chapel, and that on the north the Chapel of St. George. The latter was constructed in the early part of the sixteenth century. A lofty pointed arch divides the nave and chancel, under which is a very richly carved oak screen surmounted by the Royal Arms. The pulpit, too, is a fine piece of woodwork. It bears the arms of Bishop Lake, and is of the same date as the chancel screen—1616.

NATIONAL TOWN-PLANNING CONFERENCE.

As briefly recorded in last week's journal, a national conference on details of practical town-planning administration was held on February 23rd and 24th, at St. George's Hall, Liverpool. Between 600 and 700 delegates were present, and nearly 300 local authorities were represented.

The Lord Mayor (Mr. S. Mason Hutchinson), in welcoming the delegates, said that the old days of narrow streets and congested thoroughfares were gone, and the next generation would witness magnificent strides in civic progress of this kind.

Alderman W. Thompson, who presided at the conference, acknowledged the good work that had been done in Liverpool—whose excellent local Act was in itself almost a town-planning Act—especially the steady, unselfish work in dealing with the problem of rehousing the poorest of the poor. Another reason why they were glad to be in Liverpool was because it was the pioneer city in providing a Chair at the University to deal with the

fundamental questions of town-planning: in which respect they had set an object-lesson to the country. On the purely architectural and site-planning or village-planning side, numerous experiments carried out entirely by private enterprise have, Mr. Thompson points out, already afforded useful object lessons. These schemes include: Harborne, 53 acres; Ealing Tenants, 61 acres; Leicester (Anchor Tenants), 61 acres; Hull, 90 acres; Earswick Village, 120 acres; Woodlands Village, 127 acres; Wavertree Garden Suburb, 185 acres; Hampstead Garden Suburb, 240 acres; Glyn Cory (Cardiff) Village, 300 acres; Port Sunlight, 350 acres; Falling's Park, 450 acres; Gidea Park, Romford, 500 acres; West Hyde, Herts, 500 acres; Bournville Village, 525 acres; and Knebworth Village, 1,000 acres. There is also the remarkable Garden City experiment, on 3,818 acres, at Letchworth. With respect to municipal schemes, the town planning scheme at Ruislip-Northwood seems to cover all the ground, so far as anything practical has been done under the Housing and Town Planning Act at present. It discloses a general municipal plan for about 6,000



ELIZABETHAN HOUSE, CROSCOMBE.

acres, and a detailed owner's plan for 1,300 acres in the very centre of the area of the local authority, thus constituting by far the largest scheme so far attempted under the Act. King's College, Cambridge, the owner of the Ruislip Manor Estate of 1,300 acres, have entrusted the development of this estate to Ruislip Manor, Limited, a company which has been formed for this purpose. The Birmingham City Council has scheduled 2,320 acres of land, chiefly agricultural, belonging to forty different owners, in the parishes of Quinton (838 acres), Harborne (1,301 acres), Edgbaston (134 acres), and Northfield (47 acres), all within the city boundaries and having a population of 7,691 and a rateable value of £29,762. A second area has been scheduled at East Birmingham, comprising 1,477 acres, and in connection with this it is proposed to purchase a farm containing 82 acres, at the price of about £11,000, for various public uses, among which allotments, new roads, a school site, and playing fields have been suggested. In Scotland a garden city to be dedicated to golf is contemplated at Barassie, near Troon. The Dundee City Council has in contemplation schemes to preserve the amenity of the residential parts of the city. Edinburgh is moving with regard to certain city lands, but finds high prices a difficulty. Both Greenock and Gourock are considering schemes in view of the large influx of English workmen transferred by the Admiralty from Woolwich. The great Dunfermline Rosyth scheme has got to the stage of the local authority promoting a provisional order to extend the boundaries of the Royal Burgh right down to the Firth of Forth, so as to include the Admiralty's estate at Rosyth. A scheme which promises to be the most important piece of town planning in the country is being suggested for the district of which Doncaster is the centre. A conference of coalowners, landowners, and local authorities was held at Doncaster in January to consider the question and take further action. There it is not a question of one local authority preparing a town plan, but of a combination of local authorities in the formation of a joint board, for the purpose of planning a large area, and the problem before them is how best to deal with a very rapid development of the South Yorkshire coalfield. Within a ten miles radius of Doncaster a big city is growing up, and there will be a population of a quarter of a million within a very short time. The preparation of a town plan here is so urgent as to warrant special Government action. It is an instance where the town planning procedure of Mr. Burns's Act will hardly meet the case, because it cannot be put into operation quickly enough. There is need for some simple expeditious method which, without making a complete and final town plan, will protect the area by some general allocation of open space, limitation of houses per acre, and settlement of the main lines of traffic—all of which can be ultimately done under the powers of the Act. Proceeding, the Chairman said that the Town Planning Act was sufficiently good to do more than justify the trouble that was taken to get it on the statute-book. He suggested that premiums should be offered in different districts to architects for laying out their localities on town-planning lines. The basis of town planning was co-operation between owners and local authorities. It had not cost £500 for the promoters of the Ruislip scheme to protect nine square miles of land from jerry planning and



CROSCOMBE CHURCH.

from the growth of insanitary districts within the area.

Mr. F. M. Elgood and Mr. E. R. Abbott having detailed their experience at Northwood-Ruislip, questions were invited and answered, and the meeting adjourned.

At the resumption of the conference, on February 24th, Mr. Harper, of Cardiff, briefly reported the proceedings at an interview obtained by several members of the advisory committee with a representative of the Local Government Board. The great point which the deputation had attempted to drive home was the desirability of simplifying and condensing the Board's regulations. It was pointed out by the official, however, that the regulations now in force can only be abolished by means of an amending Act, but that in the meantime they would be applied in a liberal spirit.

A memorandum which had been prepared on the subject for discussion was analysed by the chairman. It was explained that for the purposes of a town-planning scheme, power was given to local authorities under the new Act (Section 55, Sub-section 2) to relax or alter conditions relating to width of roads and methods of road construction. Those entrusted with the task of preparing town plans would without doubt carefully consider such points as the extent to which roads might be sub-divided for the purpose of separate treatment: (a) main arterial roads, (b) secondary roads, and (c) residential roads. Regarding main arterial roads, there was little doubt it would be necessary to provide in most town-planning schemes for roads of a greater width than was prescribed under existing by-laws. In June, 1907, figures were placed before the Association of

Municipal Corporations showing that the approximate expenditure out of loans by two-thirds of the great towns and municipalities on street improvements and street widenings during the past ten years had been on an average nearly one million pounds per annum. The planning of secondary roads under a town-planning scheme must meet both the need for the amenity of those dwelling in the houses, and the need of proper through communication; while in regard to residential roads, the first consideration was that of amenity—the pleasantness and agreeableness of situation.

Mr. Raymond Unwin said if they reduced the number of houses to the acre they were approximating to the conditions of the country districts, and there seemed no reason why they should not approximate the treatment of their roads to the treatment which was found satisfactory in the country districts. He had worked out the figures for two schemes on 20 acres of land laid out on the basis in one case of ten houses to the acre and in the other case of 12.3 and 12.4 per acre, and he found they could reduce the cost per house and land and roads together, assuming in both cases the land was worth £300 an acre, from £71 per house to £62 6s. by the concession of one road. That small concession made the same difference to the landlord as if they allowed him to put 140 more houses on the 20 acres. As to the character of the roads, he said there was no comparison between the value to the community of a fully macadamised road and a lighter road. He estimated that instead of fully macadamised roads costing £7 10s. per lineal yard, lighter roads could be constructed of £5 10s. and £3 per lineal yard. In reply to a remark by Mr. Edwards, of Merthyr Tydvil, that the borough surveyor there had submitted a scheme for concrete houses to cost £100 each, Mr. Unwin said that he had built such houses at £200 each.

Alderman Bennett, of Warrington, doubted whether the ideal conditions that were being put forward by town planners were applicable to industrial towns, where a great many of the workers received no more than 20s. or 24s. a week.

Alderman Griffiths, of Southport, suggested that special areas might be set apart for working-class populations, where there might be fewer roads, and consequently reduced expense. He doubted the wisdom of advocating narrower roads.

In reply to further objections, Mr. Unwin suggested the consideration that some of the arguments applied with more force to defects in the present land system than they did to faults in the Town Planning Act.

A delegate, speaking of the Woodlands Colliery Village, Doncaster, pointed out that in his district a 36ft. ordinary bylaw road cost about £2 10s. per yard, and a 50ft. road on the same proportion would be about £3 15s. per yard. The cost was about half that of an industrial road in a town.

The Chairman said he was assured that a garden city type of road had been found to work satisfactorily in an industrial district.

Professor Adshead said that in regard to the possibility of having amenable dwellings with large open spaces around them in an industrial area, they were rather losing sight of the fact that town planning was not quite such a local matter

as had been the application of bylaws. If there was one thing more unfortunate than another, it was the question of communication. What they had to consider in the first instance in town planning was the question of arterial communication. They must bear in mind that with the bylaws they had been merely dispensers of the law, but with this town planning they had to raise their level and put a little imagination into it, for now they were going to be legislators.

At the opening of the afternoon session, the Chairman drew attention to the fact that Section 10 of the Town Planning Act had been put into operation with regard to Chertsey, where, upon the representations of four parishioners, the Local Government Board had, for the first time on record, ordered the local authority to provide suitable working-class dwellings.

Mr. H. R. Aldridge, secretary of the National Housing and Town Planning Council, opened the afternoon discussion on the standards as to limitation of the number of houses per acre. Under existing bylaws, more than forty cottages per acre might be built. At Port Sunlight and Bournville the number was seven to the acre, at Letchworth twelve, at Hampstead Garden Suburb ten and a quarter, at Earswick (Yorks) nine and a half, while in the Cottage Exhibition Estates of the Sheffield, Newcastle-on-Tyne, and Swansea Corporations, arranged by the National Housing and Town Planning Council, the standard was twelve houses per gross acre.

A delegate from an industrial centre said that the average in his district was thirty houses to the acre, and he suggested that if the limitation was to be twenty, the ground rent would increase by fifty per cent.

Councillor Johnson, of Manchester, thought that the Act should have prescribed the number of houses to the acre, instead of leaving it to the local authority.

The Chairman said that, in nine cases out of ten, as a general principle, the Town Planning Act would apply to new areas. Mr. Unwin's mention of £300 per acre as the probable cost of land for town-planning schemes brought comments from various delegates, who severally estimated that in South Wales the cost per acre would be more than £600; in Fleetwood, £800; and in Little Hulton, £1,800. The Chairman observed that apparently the price of the land would be a very serious obstacle; and another would arise from the low wages, which necessitated low rents.

The exhibition arranged by Professor Adshead comprised many fine schemes of town planning, including the replanning of Bolton as proposed by Mr. Thomas Mawson, Hon. A.R.I.B.A., jointly with Mr. Robert Atkinson, A.R.I.B.A., in a splendid series of drawings; and Mr. Sydney Kelly's proposed Liverpool-Southport-Preston high road. The awards in the competition for the prizes offered by the Co-partnership Tenants, Ltd., to students in the Liverpool School of Civic Design, for the planning of the estate at Chidwell, Liverpool, were made by Mr. Raymond Unwin, the assessor, as follows:—1, £25, G. N. Dixon; 2, £10, J. Mawson; 3, £5, R. H. Mattocks. Mr. Henry Vivian, who presented the prizes, announced that his Board, in recognition of the high merit of all the designs submitted, desired to offer a further £5 to be spent in books to be shared among the eight competitors.

THE ARCHITECTURE OF SICILY.

At a meeting of the Manchester Society of Architects on February 23rd Mr. Ronald P. Jones gave a lecture on "Sicily." The two great architectural epochs of Sicily, that of the Dorian civilisation of the fifth century B.C., and the Norman of the twelfth century A.D. were illustrated with slides, and in the course of his remarks the lecturer said that the Sicilian colonists represented the more adventurous and vigorous members of the mother community, and founded cities far more populous and magnificent than those of their birth. The Temple of Segesta forms a good introduction to the study of Sicilian architecture. Its splendid isolation among the limestone hills, its restrained and reposeful style, provide an extraordinary instance of a weight of effect obtained by simple means. Here we find imposing scale and sombre magnificence, where all the refinements of detail are absent. It has come down to us as it left the hands of the builders, perfectly preserved, but still unfinished, for the building operations were interrupted by invasion in 409 B.C. This being so, it forms one of the most lucid illustrations of Greek methods of building. The peristyle was built before the cella, and the flutes were added after the erection of the drums. The rough local limestone of which the Sicilian temples were built was faced with a film of marble stucco, in which the mouldings and refinements were worked. This fine surface was polished and coloured. The Greeks had not the modern appreciation for the beauty of material in itself, just as they had not our love of natural landscape. To them, Pentelic marble was the best building material available, ensuring the highest possible finish. In Greece and Sicily the blaze of pure white marble is too dazzling, and the subtleties of form and light and shade cannot be appreciated unless the material is toned down with colour. The Greeks aimed at the highest possible finish, and looked upon joints as evils to be concealed by every possible means. Accordingly, in Sicily, by veneering the rough porous material, the difficulty of jointing was eliminated, and a monolithic appearance obtained. In order to understand these Sicilian temples, we must visualise their gay and decorative effect, their veritable blaze of colour, set among luxuriant groves.

The remains at Girgenti are placed in surroundings less tragic and isolated than those of Segesta. One of the largest and most luxurious of the city-states of the ancient world, Girgenti, with its population of 400,000 inhabitants, exceeded even Athens itself in scale and magnificence. The traveller approaching from the sea beheld a group of buildings of almost unparalleled splendour. Seven great temples crown a long narrow ridge of rock $1\frac{1}{2}$ miles in length and 300 ft. above the plain. The Greeks took advantage of the natural site, and did not level the rock, as the Romans would have done. The great building period was from 480 to 410 B.C. In the Temple of Concord we have one of the best preserved of Greek buildings, in that of Zeus, the most colossal and one of the few failures, the scale being beyond the possibility of the style.

Slides were shown of Syracuse, and Taormina with its unrivalled view, and the lecturer then passed on to Palermo and contrasted the internal magnificence of the mixed style of the twelfth century, as seen in the Capella Palatina and Monreale, with the external architecture of the earlier Greek civilisation. The beauty of these mosaics, with their wealth and colour and logical treatment, is unsurpassed.

SOCIETIES MEETINGS.

SHEFFIELD SOCIETY OF ARCHITECTS
AND SURVEYORS.*The Notable Buildings of Warwickshire.*

A meeting of the Sheffield Society of Architects and Surveyors was held at Sheffield University on February 23rd, when Mr. J. B. Mitchell-Withers, vice-president, gave a lecture entitled "A Visit in Warwickshire."

The lecturer attended the Congress held last year by the British Archaeological Association in Warwickshire, and the buildings described were almost entirely those visited during the Congress. He referred to the military importance of Warwickshire in ancient times, owing in a large measure to its central position in the country, and to the fact that several old Roman roads, including Watling Street and the Fosse Way, passed through or near its borders. He made a passing reference to a few remains of archaeological interest, and then proceeded to speak of Kenilworth, one of the strongholds held in the Norman period by the De Clinton family. The connection of John of Gaunt with this historic building was mentioned, and the large Hall and other portions erected by him were described, as were also the additions made by the Earl of Leicester, the favourite of Queen Elizabeth.

Other domestic buildings of the county were included, the moated grange of Baddesley Clinton, the charming brick and stone mansion of Compton Wynyates, and Wroxham Abbey, the seat of Lord North, which contains portions of the pre-Reformation structure.

The lecturer then described the ancient cities of Warwick and Coventry, with their interesting churches and other ancient buildings. He dealt particularly with the church of St. Mary, Warwick, which suffered from fire and was largely rebuilt at a time when Gothic architecture was more or less a lost art. The Chancel and Beauchamp Chapel largely escaped damage at the time of the fire, and these, with the beautiful tombs and stained glass contained in them, were described. The churches of Coventry, chief among which St. Michael's, with its magnificent tower and spire, were then dealt with, the lecturer calling particular attention to the connection of St. Michael's Church with the ancient guilds of the city.

Leaving the ecclesiastical buildings, the lecturer described Ford's Hospital, Coventry, and the Leicester Almshouses in Warwick. Part of the latter, he said, dated from 1383, although the present charity was not founded until 1571. The old chapel of St. James, adjoining the latter building and situated over the west gate of the city, led to a description of the east gate and the large and interesting Castle of Warwick, with its remains of feudal splendour. The lecture concluded with a reference to Rugby and its school buildings, including the chapel erected from the designs of the late Mr. Butterfield.

LIVERPOOL ARCHITECTURAL SOCIETY.

What is the use of Architecture?

This was the interrogative title of a lecture delivered by Mr. Edward Rathbone last week under the presidency of Mr. A. Thorneley, to the Liverpool Architectural Society, in their rooms, 13, Harrington Street. Mr. Rathbone answered the question by saying that the use of architecture was to stimulate appropriate feeling. All works of architecture must be social institutions; therefore the feeling to which architecture appealed must be a social feeling. The province of architecture was

to assist in making the home, the city, or the church, or one of the subdivisions of one of these institutions. As it was only by means of the social instincts that society was held together, it was the business of the fine art of architecture to foster these social instincts. Architecture dealt only with social institutions, and social instincts had evolved themselves into habits, conscious and subconscious, during the past ages of humanity. In Egyptian architecture was seen the expression of the desire or pride of power of the Pharaohs. In Greek work was seen the cultured vanity of Athens; in Roman the social affection of the Roman people misled with pride and vanity. In Gothic work veneration clearly proclaimed itself. The perfection of pure benevolence was left for the future, but the nature of that virtue was first clearly seen in the poetry of William Shakespeare, who could sympathetically understand even a Macbeth or Shylock. Whatever might be the institution—whether a lawyer's office, a small-profit-and-quick-return shop, or a street down which people walked—it should have its appropriate tone, and expression, which should give those who used it an agreeable sense of ease with the office performed there.

BRISTOL SOCIETY OF ARCHITECTS.

Mr. E. A. Rickards on Civic Ornamentation.

At a meeting of the Bristol Society of Architects, held last week at the Fine Arts Academy, Queen's Road, Mr. E. A. Rickards, F.R.I.B.A., the architect to the Bristol King Edward Memorial Executive, gave a lecture entitled "Civic Ornamentation," which was illustrated by lantern views.

Mr. Rickards said the English had almost everything to learn in that department of art. By the ornamentation of the city, he included all that might serve as amenities in any form to the life of the people. London was without a public space or square, or even the smallest clearing, that was comparable to the average in any Continental town. Was there a public monument with any of the qualities of design which would justify its assertion of immutability and its claim as the uplifter of the more subtle side of their consciousness? As for the other accessories of their streets, could they by any glow of such enthusiasm be quoted? In making such a sweeping indictment, he was not unmindful of the many attempts at street decoration or the possibilities in the way of execution and craftsmanship already displayed, but they must admit the fact that there was behind all those efforts a certain lack of style. It was true they had an amazing record of effigies, admirable in themselves, but in what isolation they existed! Even the particular setting of those portrait figures had generally nothing which would link them to their surroundings. Some buildings, by their purpose of design, required the reflection of their style in the street accessories of their neighbourhood, and that should secure the employment of the same artist as much as if they formed part of the main structure itself, and thus characterise the immediate surroundings and enhance the object in effect. In that way would many a work of art be provided with a position in advance, which perhaps had never been otherwise called for. With regard to the temporary decorations of the city, it would readily be conceded that unless they were to obscure the design of permanent structures and arrangement they should be subservient to their

lines, or at least respond to the anatomy of the figures they were to adorn. The architect, with his sense of balance and knowledge of the salient forms of the subject to be dressed, should be an invaluable, and, in fact, the chief director. In this most restless age, when individualism was so continually asserting itself for the worst, there was need of direction and constant surveillance. In the course of his lecture Mr. Rickards frequently referred to ornamentation in Continental cities.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

Some Minor Domestic Architecture in Yorkshire.

A general meeting of this Society was held on February 23rd, Mr. Sydney D. Kitson presiding, when Mr. Harold Henderson, of York, read a paper on "Some Minor Domestic Architecture in Yorkshire." Confining his remarks to an analysis of the composition and detail of the buildings of the Dalesmen, Mr. Henderson said that these Yorkshire homesteads bore probably to a greater extent than in any other district in England the impress of the individual, the strenuous and unbending character of a race who lived in a generation of fierce and strict Puritanism. The houses were sturdy and strong, standing four square to the weather, perhaps in some cases grim and stern, testifying to the reserve of their owners in high unbroken walls, yet displaying nevertheless in occasional grotesque or quaint finish a dry wit as a tonic and saving grace. The great majority of the houses were of the seventeenth century owing to the great number of gentry who lived on the produce of the land at that time.

The characteristic features peculiar to these Yorkshire buildings were dealt with in detail in the description of a typical house with single span roof, an occasional gable ornamented by finials, a projecting porch with quaint doorway, and fully illustrated by a series of studies and sketches, by Mr. Henderson.

At the close a hearty vote of thanks was proposed by Mr. C. B. Howdill, A.R.I.B.A., and seconded by Mr. R. W. Thorp, A.R.I.B.A.; briefly responding, Mr. Henderson urged the closer study of the type of building of which he had spoken, to the end of reviving the Yorkshire Domestic Tradition—an influence now unfortunately almost extinct.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

Gloucestershire Brick Earths and Brick-making.

The President (Mr. Walter B. Wood) occupied the chair at a meeting of the Gloucestershire Architectural Association held at the Northgate Mansions on Thursday, Feb. 23rd, when Mr. L. Richardson (Hon. Fellow) gave a lecture on "Brick Earths and Brick-making in Gloucestershire." Mr. Richardson, in the course of his lecture, described the various ways in which bricks might be made, either by the slop process, semi-plastic, or plastic processes. The slop process was that which was adopted in the Severn-side brickyards; the semi-plastic at Robinswood Hill; while the plastic was that most generally used in Gloucestershire. He next described the various brick-earths available in the county, and said that a loam was the best natural earth. It, of course, was composed of sand and clay, but very excellent bricks could be made by mixing and grinding together sand and "strong" clay. This was done at the Battledown Works. The sandy beds that crop out in the lower portion of the slopes of the Cotswolds afforded

the best natural brick-earth in East Gloucestershire, and the beds could always be detected by their attendant growth of gorse bushes. The Stonehouse, Robinswood Hill, Pilford, and Aston Magna pits were all in this deposit. The Greet Potteries obtained their raw material from the same beds. Views of the extensive Cattybrook Works were shown on the screen. Here bricks were made of coal-measure shales, as is also the case at Shortwood, near Mangotsfield. At Stoke Gifford the red (Keuper) marls are ground up for brick-making purposes, and it was pointed out that this rock was largely used in the Midlands for this purpose. The lecturer emphasised the necessity of exercising great care in opening a brickyard. Suitable "earth," a site near a railway or proximity to a likely market, were essential desiderata.

ENQUIRIES ANSWERED.

Smoky Chimneys.

R. L. (WEST HARTLEPOOL), writes:—"Kindly give us your opinion as to the best cure for smoky chimneys (apparently caused by down draught), in a farm house constructed in an open part of the country."

—The chimneys apparently smoke owing to insufficient height above ridge, and possibly straightness of flues. An anti-downdraught pot may check the nuisance, which, if the building is new, is likely to abate somewhat as it dries and becomes warmer. G.

Area for Public Hall.

"QUERCUS" writes:—"I should be glad if you could tell me (a) The least area for a hall to seat 400 persons; chairs to be used, the hall being in a country district. Some authorities give 7 ft. super per chair including passages, but this seems rather full as compared with allowance per seat in theatres and music-halls.

(b) What price per foot cube be fair for a simply designed hall as above, in a large seaport town, with easy facilities for transport of materials, and good local bricks, stone, etc."

—(a) The allowance of 7 feet super per chair would be a lavish one. If a minimum spacing is desired, about 5 feet super per chair, inclusive of gangways, would prove sufficient, on a basis of 1 ft. 6 in. by 2 ft. 3 in. net per person, with passages extra. This would give a total area of 2,000 feet super, or say 36 ft. by 54 ft., which, with good planning of exits, should prove a workable size.

—(b) About 5d. per foot cube would be a reasonable basis of cost for preliminary estimates. X.

Pointing Reveals in Exposed Situation.

H. F. writes:—"Please give particulars of a successful way of pointing reveals of windows in a very exposed aspect so as to make them watertight. We have tried fine ground mortar with an admixture of hair, also mortar and cement, cement and sand, white lead and linseed oil putty, red and white lead, and lastly mastic cement and oil; but while one adheres to the wood casing of sash frame, it cracks away from the bricks, and another adheres to the bricks but not to the wood. The last named we have found the best, but even this has cracked from the wood casing sufficiently to allow driving rain to get in and run down, making a damp patch at the end of each sill. We have got galvanised iron water bars

between the wood and terra-cotta sills, and these appear to be successful, as the brickwork is quite dry in the centre of each window."

—If mastic cement has failed to exclude the water, it is probably useless to suggest any alternative material for pointing. It might, however, be worth trying the effect of the following:—Rake out pointing as deeply as possible, and point up to within about half-inch of face with common puddling clay well rammed in hard with a caulking tool. Point joint face with mastic. The theory of this system is similar to the old half-timber work of the Eastern Counties, in which the panels were filled with clay and wattles, plastered on face. Upon wet penetrating the joint (as it always must penetrate any joint between wood and a dissimilar material), the clay swells and prevents further ingress of moisture. Querist does not give any particulars of the form of reveal—if straight, either a metal water bar, or a check fillet of cement or wood would have been the surest means of stopping water penetrating; if recessed, a small molding fixed to frame in the angle of the reveal covering pointing might even now prove effective. G.

Cavity Walls.

W. B. (WHITEHAVEN) writes:—"It is the usual practice when building houses with cavity walls to put, say, 9 in. by 6 in. air gratings, chimneyed through the full thickness of wall; and, in order that no air may get from them into the cavity, to ventilate under the ground floor. Suppose 9 in. by 3 in. vents are placed at the bottom of the cavity, and also at the top for ventilating the cavity. What objection would there be to dispensing with the 9 in. by 3 in. gratings at the bottom of the cavity, and allowing the air from 9 in. by 6 in. vent to enter the cavity as well as to pass under the floor, and to omit air ducts from under the floor? Do you think that the grating at the top of the cavity would tend to draw any stagnant air from under the floors?"

—Though the method described as "usual" is probably the most common one for ventilating the cavity, the alternative proposed is not altogether novel, and various intermediate methods are also practised. The argument in favour of treating the ventilation of cavity and floor space as entirely separate is that moist air is formed in the cavity when the outer wall becomes damp, which tends, by its greater density, to descend into the floor space; and this it is considered desirable to avoid. On the other hand, it is undoubtedly the fact that when the walls are dry and the air in the cavity warm, there is a tendency for it to draw stagnant air from the floor space and so assist the ventilation of the latter. In some parts of the country the practice with regard to ventilating the wall cavity is to put in no external air gratings, but to draw air from the cellar or floor space inside, and to discharge it (also inside) above the attic joists. The chief objection to the intercommunication of the ventilation openings from the outer air to both floor and cavity is an extension of the general objection entertained by some sanitarians to hollow walls; that harbourage for small vermin is provided, leading to decaying animal matter accumulating in inaccessible positions, which by this method connects a supply of foul air to the floor space, whence it is drawn through joints and cracks into

the house. It is for querist to weigh the relative importance of the various advantages and objections.

THE NEW KING'S COLLEGE HOSPITAL.

It is now seven years since it was decided to remove King's College Hospital from its present position at the rear of the Law Courts to a site at Denmark Hill, in the south-east of London. A competition for designs was instituted, and Mr. W. A. Pite, F.R.I.B.A., was appointed architect. In the summer of 1909 his Majesty King Edward laid the foundation-stone, and since that date the building has rapidly proceeded. The Out-Patient and Casualty Department and Bathing Establishment, together with the administration block (shown by the accompanying illustration) are now roofed in and nearly completed; and there remain to be built the chapel, ward blocks, operation theatres, and some other smaller departments.

The total cost of the scheme, exclusive of site, will be £190,000.

In the old hospital there are 220 patients. The committee wish to open the new one with 328; and they desire to preserve the value of every portion of the existing site of King's College Hospital for future endowment. It is proposed to start with twelve wards and two special wards; and as time goes on to increase the accommodation to 600 beds.

On so eminent an authority as Sir David Ferrier, it is stated that the hospital, when completed, will be the best equipped that has yet been erected. The large out-patients' department has a fine central hall, seating more than 500 patients. Arranged round it are the various consulting departments, the plan having been so contrived as to provide that the patients who have seen the consulting staff will not again enter the waiting hall, but leave the building by another route.

The arrangements for dealing with casualty cases of all kinds—both accidents and cases of sudden illness—seem to be most effective. X-ray, dental, and children's departments are also provided, and a large and commodious section is allotted to baths of various kinds. King's College Hospital will, indeed, possess the most complete medical bathing establishment in London.

NEW HOSPITAL BUILDINGS.

Steps are being taken to erect a new general hospital in the Putney district, which will not only provide for the treatment of accidents, but also of patients suffering from general diseases. This has been made possible by the will of the late Mr. H. G. Chester, who left sufficient money to build a hospital accommodating fifty beds.

Mssrs. Young and Hall are the architects for proposed structural alterations to the North Staffs Infirmary.

Plans have been approved for an addition to the Stirling Fever Hospital, providing accommodation for ten beds in five wards, at an estimated cost of £1,600. A feature of the design is that the division walls between the wards are to be of plate glass to assist efficient supervision with a small staff.

Comprehensive extensions to the Chichester Infirmary costing close on £14,000 are anticipated. One of the leading features is a thoroughly up-to-date operating theatre. Mr. Ball is the architect.

Messrs. King and Son, builders, have just completed the new isolation hospital establishment to serve Egham and Old Windsor parishes. Mr. Walter Gray, of Egham, was the architect.

Messrs. Briggs, Wolstenholme, and Thornely submitted to the Select Vestry on February 7th estimates and outlines of a scheme for the proposed epileptic colony at Maghull. It shows accommodation for 300 patients at an approximate total cost of £46,000. It was decided to submit the scheme to the Local Government Board for approval.

Under the superintendence of Messrs. Evans, Williams and Evans, architects, a new cottage hospital has been erected at Pontypridd. Provision is made for sixteen beds, ten for men, three for women, one separation ward, and two children's cots. The contract sum was £3,590.

[Reconstruction of Hospitals in Glasgow.]

For some time past the hospital accommodation in Glasgow has been felt to be inadequate, says the "Lancet." Within the last three years the Maternity Hospital has been rebuilt on a very large scale, the Cancer Hospital has been practically rebuilt, the Royal Samaritan Hospital for Women has been enlarged, and the Western Infirmary has added a new block to its buildings. The Royal Hospital for Sick Children is to be rebuilt immediately on a better site, and with more than double its present accommodation. The Royal Infirmary is also in course of reconstruction; the block at present being built being that for special diseases, together with the third section of the surgical block, which will then be complete and will contain 200 beds. The new pathological block is also nearly completed, and it is the intention of the directors to proceed at an early date with the erection of a portion of the new medical block, which embraces nearly one half of the main frontage upon Cathedral Square, together with the east wing which connects the Cathedral Square block with the central or special diseases block.

THE QUALIFICATION OF ARCHITECTS

At a special meeting of the Edinburgh Architectural Association on February 24th, Mr. James S. Gibson, F.R.I.B.A., London, explained the proposed new scheme for the statutory qualification of architects of Great Britain and the Colonies. He stated that in 1910 the Institute obtained a supplemental charter, by means of which they instituted a new class, called Licentiates, who were either architects of thirty years of age and who had been five years in practice, or assistants of thirty years of age and who had been engaged for ten years in the study of architecture. Already there had been elected to that class more than 700 architects, and over 250 had sent in proposal forms, and were waiting election. It was expected that over 1,000 would be elected within the one year during which the class was to be open, and that period closed on March 23rd of this year. Immediately on the expiry of that period the Royal Institute would proceed to draft a Bill for the statutory qualification of architects, so as to put them on the same plane as doctors and lawyers—in other words, to close the profession to persons other than those qualified by examination. That step would improve architectural education throughout the country, as the only method by which an architect could begin practice would be by becoming a member of the Institute by examination.



ADMINISTRATION BLOCK OF THE NEW KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E.
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

COMPETITIONS.

New Cumnock United Free Church.

Members and Licentiates of the Royal Institute of British Architects are requested not to take part in the above competition.—By order of the Council,—Ian MacAlister, Secretary, 1st March, 1911.

[The character of this competition is evident from the note at p. 224 of last week's issue.]

Bradford New Infirmary.

At the annual meeting of the authorities of Bradford Royal Infirmary, held on February 28th, Mr. George Priestman, chairman of the Infirmary House Committee, stated that, in response to advertisement, 79 of the best-known architects of the country had applied for ground-plans of the proposed new infirmary, and from the large number of competitive designs that might therefore be reasonably anticipated, "probably three of the selected sets of plans would be exhibited." Why restrict the number to three? It would surely be, on the whole, much more satisfactory to follow the usual practice of exhibiting as many as could be accommodated.

Castle Street Improvement, Swansea.

We understand that the date of this competition has been extended to May 4th. Mr. S. S. Reay, F.R.I.B.A., is the assessor, and there is no question as to the fairness of the conditions, or as to the competition being conducted on right lines: yet the proposed extension of time seems to indicate that the applications for particulars have been somewhat disappointing—probably for no better reason than that such a competition is somewhat of a novelty, this being apparently the first occasion upon which such a course has been taken by a provincial corporation. The corporation, being desirous of effecting a public improvement in Swansea, invite architects to submit designs and estimates in open competition for the elevations of the new buildings to be erected upon a site lying upon the east side of Castle Street, and having an area of approximately 2,496 square yards, with a frontage to Castle Street of 380 ft., and return frontage to Welcome Street and the Postern of 15 ft. and 30 ft. respectively. The architect whose design is adopted may be employed by the corporation to prepare the working drawings, etc., at the rate of 2½ per cent. upon the estimated cost of his design, which must not exceed £10,000, "and under no circumstances will he be entitled to receive more than £250." He will receive £50 upon his appointment, and the remainder on the satisfactory completion of the final working drawings. The corporation will not themselves erect the new buildings, but will let the land on building leases, and will supply the lessees with copies of all the working drawings and details of the adopted design, which the lessees will be entitled to use, employing any architect they choose. A premium of £50 will be awarded to the design placed second.

LIST OF COMPETITIONS OPEN.

MARCH 31. CHURCH, NEW CUMNOCK.—Particulars in our issue of March 1.

[R.I.B.A. request Members and Licentiates not to take part.]

MARCH 31. LIBRARY AND ART GALLERY, MANCHESTER.—The authors of ten selected designs will be invited to final competition. Prof. Reginald Blomfield, A.R.A., will act as assessor, in conjunction with the City Architect. Apply to Thomas Hudson, Town Clerk, Town Hall, Manchester.

APRIL 1. MUNICIPAL OFFICES FOR COUNTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 1. "OWEN JONES" COMPETITION FOR WALL-PAPER DESIGNS, etc. Designs to be submitted to the Board of Education by April 1. The competition is open to students in schools of design. Six prizes are awarded by the Society of Arts, John Street, Adelphi.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

MAY 4. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250, for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea. (See note above.)

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

AUGUST 21. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

NO DATE. REMODELLING ASSEMBLY ROOMS, INVERNESS.—Particulars, (one guinea) from Thomas G. Henderson, Eastgate House, Inverness.

OBITUARY.

Mr. William Jenkins.

The estate of the late Mr. William Jenkins, architect, of Edgbaston, Birmingham, has been proved at £70,289 gross.

Mr. Benjamin Stocks.

Mr. Ben Stocks, a well-known architect of Huddersfield, died on February 27th, aged 72. He had designed some of the principal elementary schools and chapels in the district, in addition to mill property.

Mr. William Page Watts.

We regret to announce the death of Mr. William Page Watts, at his residence, No. 5, Groombridge Road, South Hackney, aged 91 years and six months. He was for many years a collector for the London and Middlesex Archaeological Society, the Surrey Archaeological Society, and the London Art Union. He attended on Monday, January 30th, a meeting of the Hampstead Antiquarian and Historical Society, and after only three days' illness he died on February 3rd. He was much employed in tracing pedigrees, and had produced "The Book of the Bokenham Family."

LEGAL CASES.

Joint Landowners' Building Rights.

In the Chancery Division of the High Court of Justice, Richard Lakeman sought an injunction to restrain Henry Moat from erecting, at Stocksfield, Northumberland, any building in breach of a deed of mutual covenants.—For the plaintiff, Mr. Ingpen, K.C., stated that defendant had been for many years a member of the committee of the Mutual Covenanters, and, like the plaintiff, was part owner of the building estate in question. Defendant had submitted to the committee plans for buildings which he desired to erect on the estate, but these were disapproved of because it was considered that the proposed buildings would be too near the fence of another owner, and because they did not conform to the style of building approved by the committee. Defendant complied with the request as to style, but declared that he was not bound as to the precise location of his buildings, so long as he did not infringe the building line. The object of plaintiff was simply to maintain the rights of the fifty-three people who owned the estate. It was a very common thing for people in Newcastle to join in this way to buy an estate.

His Lordship: I am very glad to hear it. It seems to me to be a very wise course.

For the defendant, Mr. Bramwell Davis contended that the committee had no power to determine the site.—His Lordship thought that the committee had a right to reject plans in which the position of the buildings appeared to them to be improper. Otherwise the estate might be built upon in a higgledy-piggledy manner. He would, therefore, grant a declaration that, under the covenant, the committee were justified in refusing to pass plans in consequence of the position of the buildings proposed. He would not grant a mandatory injunction ordering defendant to pull down the house he had built in defiance of the committee, but he would order him to pay the costs.

The Cummins System: A Question of Royalties.

On February 16th, in the Chancery Division, the Master of the Rolls concluded the hearing and delivered judgment in the case of Robert J. Cummins, of Pittsburg, U.S.A., v. W. J. Stuart, who is a builder and contractor of Belfast and Dublin. Plaintiff sued the defendant for royalties alleged to be due in connection with reinforced concrete, used according to what was known as the Cummins system, invented and patented by the plaintiff. By an agreement of April, 1907, the defendant was appointed sole licensee for the United Kingdom and European countries of the right to use the plaintiff's patented improvements, and to provide monthly accounts of all contracts entered into by him or his sub-licensees for the use of the patented system. Plaintiff alleged that defendant failed to keep the agreement. He accordingly asked that accounts should be taken. The defendant denied that he failed to observe the terms of the agreement. He further said that only one contract had been executed, and that he had tendered to the plaintiff the amount of the commission due upon it, but it had been refused. He counterclaimed to have the agreement set aside and to have an inquiry as to damages.—The Master of the Rolls decreed that the defendant should pay to plaintiff the amount of his liabilities calculated up to the 1st September, 1909, and the costs of the action. Defendant would also have to pay to plaintiff the royalties down to the issue of the writ.

NEWS ITEMS.

New Consulting Architect to Lincoln Cathedral.

Sir Chas. Nicholson, M.A., F.R.I.B.A., has been appointed consulting architect to the Dean and Chapter of Lincoln Cathedral.

* * *

New Parish Hall for Richmond.

In connection with St. John's Church, Richmond, Surrey, a new parish hall is being built, from designs by Mr. Arthur Grove, architect, of 1, Hare Court, Temple. The building will include a hall 60 ft. by 32 ft., with main entrance in Church Road.

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Works in Reinforced Concrete.

Messrs. Jas. H. Tozer and Son, Ltd. (Lock Woven Mesh System) have secured contracts for erecting a single coal bunker of 300 tons capacity, and a water tank for 50,000 gallons, also walls and floor to the power house for the Skinningrove Ironworks Co., Ltd., Yorks.

* * *

A Valuable City Site.

The New Synagogue, Great St. Helen's, is to be closed and the site offered for sale. The synagogue was built in 1837, and the value of the site is estimated at over £100,000. It is long since so large an area close to the Bank of England and the Stock Exchange has been placed on the market.

* * *

Transactions of the London Town-planning Conference, 1910.

The R.I.B.A. are issuing free to every member of the Town-planning Conference held in London last October a copy of the Transactions. Owing to the numerous applications for additional copies, however, the Council have decided to issue a special edition at the price of 28s., or 21s. net if the order is given by March 13th. The volume comprises 700 pages, with 300 maps, plans, drawings, and photographic illustrations.

* * *

Hull Town Hall Extension.

A proposal to pull down the Hull Town Hall in Lowgate and rebuild it in harmony with the new extension, now approaching completion, is receiving the close attention of the Hull Corporation Property Committee. The scheme is estimated to cost from £20,000 to £25,000, and it is indicated that, in the event of the old building being retained, about £6,000 would have to be spent upon it in repairs.

* * *

Cardiff Exchange Improvements.

The directors of the Cardiff Coal and Shipping Exchange have accepted the tender of Messrs. E. Turner and Sons for the carrying out of the alterations at the Exchange. The amount of the tender is £7,228. Ten firms sent in tenders for the work, which has to be completed within six months from the signing of the contract. The plans for the alterations have been prepared by Mr. E. Seward, F.R.I.B.A.

* * *

Stirling Old Bridge.

Recently a joint committee of representatives from Stirling Town Council and from the Central District Committee of Stirling County Council met at the Old Bridge of Stirling, when a report was submitted by the Burgh Surveyor, along with the County Surveyor, on the condition of the bridge.

From the report it appeared that the outer rings of the arches are spreading gradually towards the top of the arches and that the parapets are also swinging out, this being caused probably by the roadway, which is paved with whin rubble with earth joints, not being impervious to moisture. It was recommended that a joint application be made by the Town Council and the County Council to the Commissioners of Works, asking them to become guardians of the Bridge under the Ancient Monuments Protection Acts, and that, if the Commissioners make a condition of doing so that the Bridge be closed for vehicular traffic, the Town Council and County Council consent to this being done.

* * *

The French Palace at Aldwych.

It is announced that the whole of the capital required—£1,000,000—for the construction of the French Palace of Arts and Industries on the Aldwych site has now been subscribed. The company state that within the next few weeks a stand containing some 6,000 seats for viewing the Coronation procession will be erected on part of the land, and that the exhibition buildings will be commenced towards the end of June.

* * *

The New Quebec Bridge.

For the construction of the new Quebec bridge the tender submitted by the St. Lawrence Bridge Company has been recommended for acceptance. The firm in question is composed of the Dominion Bridge Company and the Canadian Bridge Company, of Walkerville. The tender price is about £2,770,000, and it is stated that if the contract is given to the company, new machinery to the value of some £410,000 will require to be purchased for the work.

* * *

The "Lycidas" Statue.

It will be remembered that in 1905 considerable controversy was aroused by Mr. J. Havard Thomas's life-size statue entitled "Lycidas," which, after having been rejected by the authorities of the Royal Academy, was exhibited at the New Gallery. This statue has been presented to the nation by Mr. and Mrs. M. E. Sadler through the National Art-Collections Fund, and is now exhibited in the Statuary Hall of the National Gallery of British Art (Tate Gallery), Millbank.

* * *

Grecian Marblers (Marmor).

A company under this title was registered on February 15, with a capital of £200,000 in £1 shares, to carry on the business of quarry masters and marble and stone merchants, workers of marble and stones of all kinds, etc.; to acquire the undertaking and assets of Marmor, Ltd., and to adopt an agreement with W. J. Heriot and J. Howden. The signatories are: H. T. Jarman, 158, Mill Lane, N.W.; C. W. Morgan, 37, Homecroft Road, Sydenham, S.E.; B. Young, 58, Fullerton Road, Wandsworth; F. Inder, Emmanuel Cottage, Worcester Park, Surrey; A. E. Mitchell, 30, Grasmere Road, South Norwood, S.E.; H. L. Armstrong, 488, Seven Sisters Road, South Tottenham; W. W. Miller, 9, Belgrave Road, Walthamstow (one share each). Minimum cash subscription, seven shares. The provisional directors are: H. T. Jarman, C. W. Morgan, B. Young, F. Inder, A. E. Mitchell, H. L. Armstrong, and W. W. Miller.

The Coronation Exhibition.

An army of workmen is engaged at Shepherd's Bush in carrying out preparations for the Coronation Exhibition, which opens in May. The nature of the task may be gathered from the fact that the painting and decorating of the buildings alone consumed 150 tons of paint; 30 miles of roads have been put under repair; 160 miles of cable have been relaid, and 40 additional miles laid down; while nearly 4,000,000 electric lamps are being fixed for the illuminations, which this year will surpass anything that has been attempted before at the White City. The gardens are receiving special attention, and nearly half a million plants have been laid out.

* * *

Calculator for Reinforced Beams.

A leaflet issued by Messrs. J. Halden and Co. (Limited) describes the "Twelve-trees" calculator for reinforced concrete beams, which is a mechanical device capable of reproducing in graphical form the conditions obtaining in the beams under load. The calculator measures about 6 in. square, and has white celluloid scales, burnished brass cursor, and pivoted index. At each setting of the instrument an arrangement of its moving parts is effected by one movement of the hand, and a stress diagram then gives the actual stress intensities and other correlative values required by the designer.

* * *

Preservation of Whitgift Hospital.

The Croydon Borough Council was informed last week that in reply to its application for compulsory powers to further widen North End, bringing the new frontage line to within a short distance of the Whitgift Hospital, the Local Government Board had declined to give its sanction until it received a complete scheme from the Council. At the public inquiry, Dr. Martin, for the Whitgift Hospital Preservation Committee, strongly opposed the application of the Council on the ground that its ultimate intentions regarding the old almshouses were not disclosed. On the other hand, the Town Clerk declared that the scheme left the future of the hospital quite an open matter.

* * *

Proposed New Bridge for the Medway.

The Bridge Wardens have decided to reconstruct the bridge over the river Medway at Rochester on account of the insufficient headway for navigation and of the deterioration of the present structure under the heavy tramway, motor, and general traffic that was not contemplated 50 years ago when the bridge was erected. The total length of the present bridge, with approaches, is about 1,075 ft. When reconstructed the bridge will have its centre line coincident with that of the existing bridge, the main arched spans being replaced by steel girders of open braced type. This substitution of girder for arch will give the required increase to the head-room under the bridge. The opening at the Strood end will be spanned by ordinary plate girders. The girders of the main bridge will be spaced at 30 ft. 2 in. centres, giving 26 ft. of clear roadway. Footways 7 ft. wide are carried on extensions of the cross girders beyond the main girders, making 40 ft. in all. The substitution of two girders for eight ribs makes it necessary to provide some method of distributing a load from two points over a foundation designed to carry its load at eight points. This will be effected

at the piers by means of deep trussed girders resting on the existing cast-iron skew-backs, and carrying the girder bearings. There will be a girder for each pair of bearings. At the abutments the load is distributed through a plate girder resting on three grillages. The contract for the reconstruction has been let to Messrs. John Cochrane and Sons, and the work will be completed in about two years' time. The engineers are Messrs. Baker and Hurtzig and Mr. John J. Robson.

Explorations of Roman Britain.

At a recent meeting of the British Academy, Professor Haverfield, Fellow of the Academy, gave a summary of his second annual report on the principal explorations of Roman Britain during the past year. Lord Reay presided, and there was a large attendance of Fellows of the Academy. Professor Haverfield said that the past year constituted in some ways almost an epoch in Romano-British research. Several well-known excavations, continued for many years, had just come to an end. Work had ceased at Silchester in 1909, and at Caerwent and Newstead in 1910; of explorations conducted on an extensive scale, only that of Corbridge was still in full course, and no new undertaking had taken the three vacant places. The scheme for the uncovering of Verulamium, outside St. Alban's, promoted by the Society of Antiquaries, had died still-born, as had been announced in the newspapers. The scheme for the uncovering of Viroconium, Wroxeter, near Shrewsbury, was still in its cradle, though good hopes might be entertained of its future. There had, indeed, been smaller excavations—at Hucclecote, near Gloucester, where many interesting, but as yet imperfectly deciphered tile-inscriptions had come to light; at Holt, where Mr. Acton seemed to have hit on tile-works and pottery works used by the Twentieth Legion, quartered eight miles away, at Chester, and on several smaller sites; but the total of spade-work seemed somewhat small. On the other hand, much had been written.

A West London Improvement.

A street improvement proposal of great importance to West London is to be submitted to the Paddington Borough Council and the London County Council, backed by the support of the leading drapery firms in Queen's Road and Westbourne Grove, Bayswater. It provides for the construction of a large circus—to be known as Westbourne Circus—at the junction of Queen's Road and Westbourne Grove, and the conversion of a comparatively insignificant thoroughfare now known as Pickering Place into a continuation of Queen's Road, leading from the proposed circus. The promoters propose that the London County Council shall be asked to contribute to the heavy cost of the proposed improvement, as it is essentially one of importance and value to the whole of London.

Proposed New School Buildings, Wallsend.

The Northern Architectural Association, 6, Higham Place, Newcastle-upon-Tyne, issued, on March 2nd, the following circular:—"The conditions of this competition have been considered by the Council of the Association, and I am requested to draw your attention to the following: 'The promoters do not state that an architectural assessor will be appointed to make the award, nor is any pledge given that the author of the design placed first will be employed to carry out the work (unless there is some valid ob-

jection to his employment).' In these respects the conditions are a distinct violation of the regulations issued by the R.I.B.A., and I am requested to ask members not to compete unless the conditions are modified.—Charles S. Errington, hon. secretary."

Historic French Chapel in London Closed.

That historical monument of the French Revolution, the French Chapel of St. Louis de France, situated at Little George Street, Portman Square, was closed on Sunday, February 12, and, it is stated in the "Morning Post" that no further services will take place there. The Chapel has a very interesting history, having been established on March 15, 1799, by Monsieur l'Abbé François Emmanuel Bourret, of the Compagnie de St. Sulpice, to meet the needs of the refugees from the French Revolution. Amongst those who attended services within its walls were King Louis XVIII., the Comte d'Artois, the Ducs d'Angoulême et de Berri, the daughter of Louis XVI. and of Marie Antoinette, the Duc de Bourbon, and the Ducs d'Orléans, de Montpensier, et de Beaujolais. The obsequies of Marie-Josephine de Savoie, wife of Louis XVIII., took place in this chapel, the Cardinal de Talleyrand-Périgord, Archbishop of Rheims, officiating, and here, also, were conducted the funeral services of the Duc de Montpensier and the Duc de Beaujolais, brothers of King Louis Philippe. The Comte de Paris made his first communion in the Chapel, it being administered to him by Cardinal Wiseman on July 20, 1850, also the Duc de Chartres in the following year, and the Prince Imperial fulfilled his religious duties here before setting out on his fatal journey to South Africa; and here, on October 27, 1886, the Princess Hélène of Orléans, subsequently Duchesse d'Aosta, was confirmed by Cardinal Manning.

FEDERATION NEWS.

Bath.

The annual dinner of Bath Master Builders' Association was held at Fortt's Restaurant on February 14th, Mr. Stephen Ambrose, president, in the chair. The chief items in the toast-list were as follows (the name of the proposer in each instance coming first):—"The Mayor and Corporation," Mr. W. A. Sheppard, the Mayor of Bath, and the Town Clerk; "The Architects, Engineers, and Surveyors," Mr. A. W. Willis, Mr. C. J. Calvert, and Mr. E. Keene Oliver; "The National and South-Western Federation of Master Builders," Mr. F. J. Blackmore, Mr. W. E. Drew, and Mr. A. G. White, National Secretary; "The Bath Master Builders' Association," the Mayor, and the President of the Association.

Darlington.

After a lapse of 35 years, the Darlington and District Master Builders' and Allied Trades' Association have revived the custom of having an annual dinner. This took place at the King's Head Hotel, on February 23rd, Mr. M. Mackenzie presiding.

Mr. John Guthrie presented a framed portrait group of the association, a gold-mounted umbrella, and a case of pipes to Mr. J. Johnson, the retiring hon. secretary. Mr. Johnson returned thanks, and said that he would like to see Darlington not only federated, but become a centre itself.

The toast of "Our Guests" was proposed by Mr. Thos. Brown, and responded to by Mr. W. H. Hope and Mr. J. Johnson.

Redditch.

The fifth annual dinner of Redditch Master Builders' Association was held at the Unicorn Hotel, Mr. A. E. Edkins, president, in the chair. The chief items in the toast-list were as follows:—"The Redditch Master Builders' Association," Alderman G. W. Hobson, Mr. A. E. Edkins; "The local governing bodies," Mr. J. Gross, Mr. L. F. Lambert; "The visitors," Mr. G. Huxley, Mr. F. W. Amphlett, Mr. R. J. Webb, and Mr. W. Jameson; "The Architects," Mr. F. Newbould, Mr. A. J. Dickinson, Mr. F. F. Baylis; "The President and Vice-Presidents," Mr. Lambert, Mr. A. E. Edkins, Mr. H. Holloway; "The Secretary," Mr. F. C. Huins, Mr. F. Turner; the first name in each case is that of the proposer.

Yorkshire Federation.

The monthly meeting of the Executive Comtee. of the Yorkshire Federation was held at the Builder's Exchange, Cross Burgess Street, Sheffield, on February 16th, 1911. Mr. A. J. Forsdike, president, who occupied the chair, was supported by 51 delegates from the Federated Associations.

The President called attention to the sudden death of Mr. John Pickard, of Leeds, a past President of the Leeds Association, and for many years a delegate of the association to the Yorkshire Federation. A letter of condolence had already been tendered to the family.

The accounts having been passed, the treasurer urged the local associations to make early payments of their subscriptions, in order that the efficiency of the Federation might be maintained.

A letter was read from Mr. J. Vickers Edwards, West Riding Architect, pointing out that as far as possible arrangements were made to have the final payments made in compliance with the contracts entered into, but that a very great deal depends upon the builder himself in sending in accounts, submitting receipts for prime cost items paid by him, etc. The secretary was instructed to make similar representations to Mr. Stewart, the Architect of the West Riding Education Department.

A report was submitted of a conference which was held at the Huddersfield Building Trade Exchange, with Mr. A. J. Sherwell, M.P. for Huddersfield, whose attention was called to the arbitrary manner in which many clerks of works exercised their duties in respect of supervision of Post Office contracts, entailing heavy financial loss on contractors, without any commensurate structural benefits. The secretary of the Federation explained the nature of the experience collated by and through the courtesy of members, and emphasised the points to which the consideration of H.M. Office of Works had been respectfully invited. Mr. Sherwell promised that the matters brought under his notice should receive his most careful consideration and that he would take the earliest opportunity of conferring with the Office of Works, with a view of ascertaining how far the wishes of the Federation could be met.

Attention was drawn to the requirement in certain Corporation contracts (Sheffield and Leeds) for priced bill of quantities to be enclosed with tender. As this is contrary to the strong recommendation of the Federation, special circulars were sent to members requesting them to conform loyally with the recommendation, as it is only in this way that the effectiveness of the Federation to safeguard the interests of members can be adequately maintained, and the imposition of additional causes of complaint and irksome conditions obviated. The loyal and sympathetic co-operation of members is cordially acknowledged and warmly appreciated.

The President reported that full verbatim reports of the case of Wallace v. Douglass were being printed, and that the Federation had ordered 100 copies in order that each local association may have one or two supplied for the guidance and information of federated members.

Attention was drawn to the great desirability of the Local Association in an area in which the Local Authority was seeking to obtain powers for electrical wiring and fitting, to take diplomatic advantage of such application by seeking to obtain clauses for the protection of electrical contractors; providing that the actual work would be carried out by such contractors instead of being executed by a Corporation Electrical Works Department.

A letter was read from the Board of Trade requesting the attention of the Federation to certain particulars with regard to apprenticeship in the various sections in the building trade, and requesting to be favoured with observations thereon. The points to which particular attention was directed are:—(a) How far is a "regular" apprenticeship (i.e., under indentures, or some other formal agreement) the prevailing method of recruiting the various skilled branches of the industry? (b) How are journeymen obtained in any branch, if not by apprenticeship? (c) Can anything more be done to improve the present system for training skilled workpeople?

It was decided to bring the subject forward for discussion at the next meeting, and local associations were requested to forward their views on the phases named.

Messrs. A. J. Forsdike and J. W. Mallinson were appointed to attend the Liverpool Town Planning Conference on February 23 and 24, as representatives of the Federation.

It was resolved that the Federation exercise of the option under the National rules, accept the commuted basis for the current year, and undertake to pay a subscription of £105 6s. 8d. to the National Federation.

Attention was called to a recent legal decision in which emphasis was laid on the importance of insisting that all contracts with local authorities shall be under seal; and reference was also made to the case of Bowers v. Chapel-en-le-Frith R.D.C., in which it was held that where the contract specified the use of a special appliance made by a particular firm, the contractor could not be held responsible for its alleged defects.

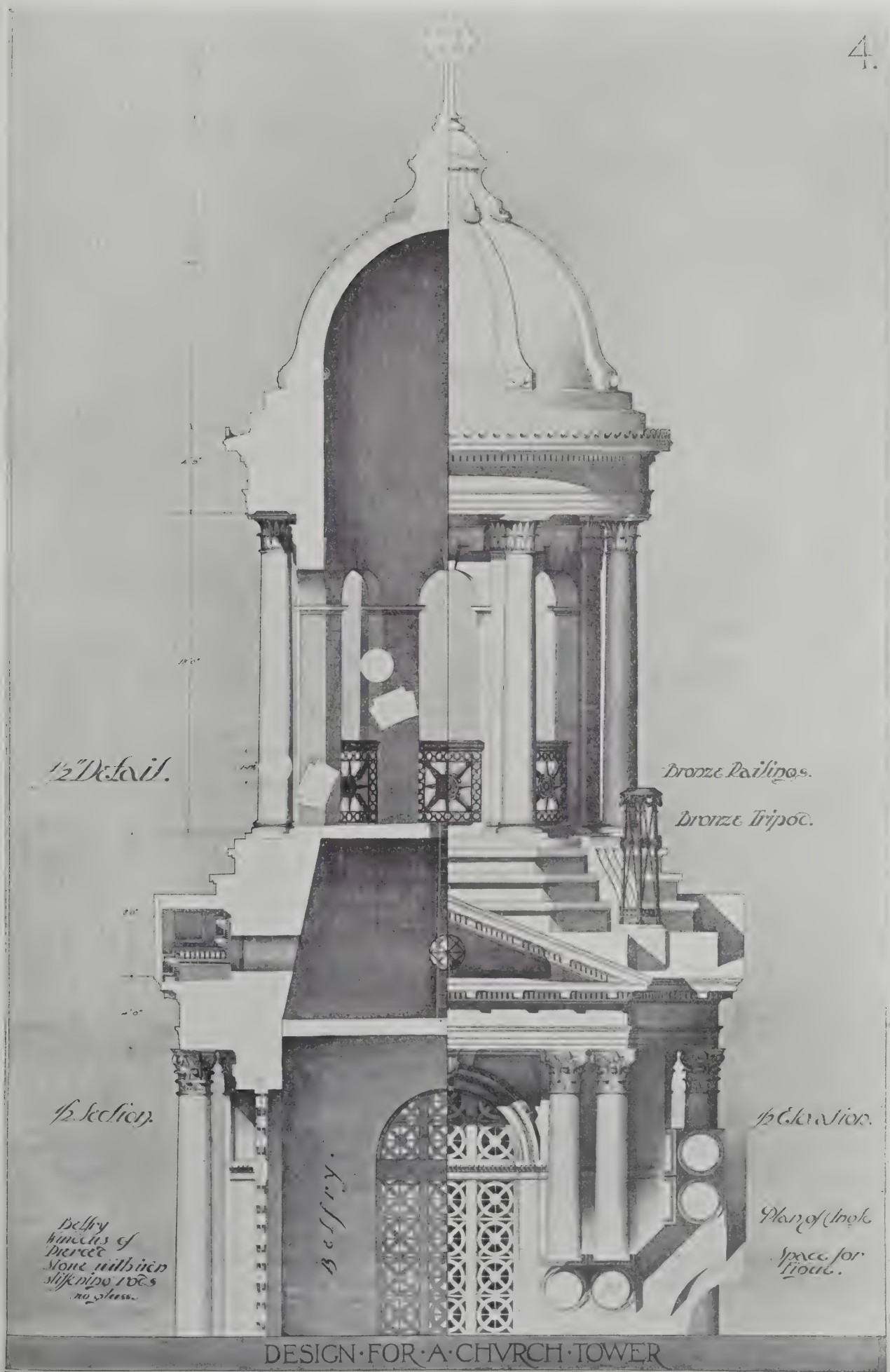
Other matters dealt with referred to the official journal, the telephone system, and some unsatisfactory features of policies ensuring against workmen's compensation.

The next meeting will be held in Wakefield on Thursday, March 16th.—J. DAVIDSON, Secretary.

2.



DESIGN FOR A CHVRCH TOWER



THE ARCHITECTS' & BUILDERS' JOURNAL.

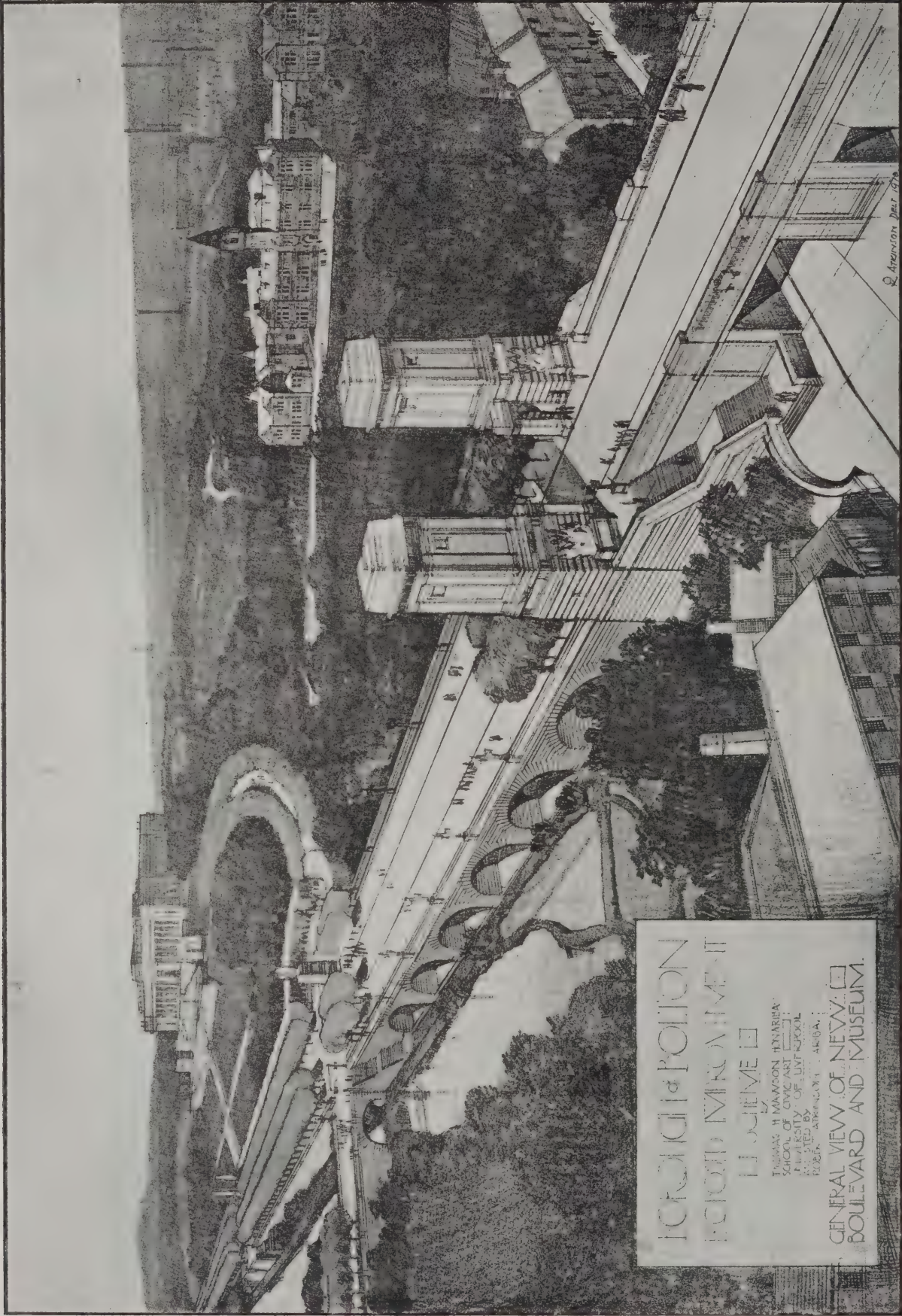
WEDNESDAY,
MARCH 15th, 1911.

Volume XXXIII.

No. 842.



CENTRAL STATION HOTEL, GLASGOW: DOORWAY IN DINING SALOON.
JAMES MILLER, A.R.S.A., F.R.I.B.A., ARCHITECT.



PROPOSED MONUMENT
TO THE UNIVERSITY OF NEW ZEALAND
BY
J. A. M. 1911
DESIGNED BY MR. W. H. MASON, F.R.A.S.
SCHOOL OF CIVIL ARCHITECTURE
UNIVERSITY OF NEW ZEALAND
DUNEDIN, NEW ZEALAND.
GENERAL VIEW OF NEW ZEALAND
BOULEVARD AND MUSEUM.

THE ARCHITECTS' & BUILDERS' JOURNAL.

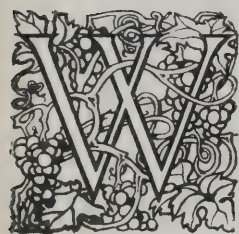
[MARCH 15th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 842.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

The Crisis of an Acute Controversy.



WE have no intention of inflicting upon our readers a detailed history of the almost incredibly inept affair now so widely known as the St. George's Hall Controversy. From its inception some six months ago, the affair has been marked by a display of municipal obtuseness that ought to be, if unfortunately it perhaps is not, without

parallel. It will be remembered that the notion of cutting into the podium of St. George's Hall, to provide a setting for a large equestrian statue of the late King, originated first with the eminent sculptor, Mr. Goscombe John, who submitted to the Liverpool Corporation Memorial Committee a model showing an arrangement of oblique steps flanking a pyramidal group of sculpture. The members of the Memorial Committee expressed their entire approval of the conception, which was ultimately submitted to the Council for ratification. In face of a storm of professional disapproval, the City Council, at a general meeting, referred the matter back "for further consideration," and it was popularly supposed that nothing more would be heard of it. The Memorial Committee, however, instead of accepting the rebuff as final, and devoting their energies to the discovery of an acceptable site, persevered with the project. A committee of London experts was called in, and Mr. Norman Shaw put forward a model in which Mr. Goscombe John's steps were reversed, and a single pedestal replaced the three originally proposed. In spite of the fact that Sir Aston Webb and Professor Reginald Blomfield—both members of the expert committee—strongly opposed the adoption of such a scheme (or, indeed, of any project involving alteration of the fabric of St. George's Hall), the municipal authorities seemed determined to push the matter through. No sooner was this decision rumoured (in February) than the most extraordinary opposition sprang up in all quarters. In spontaneity and completeness the protest was unique of its kind. The most eminent American architects, the architect members of the French Academy of Fine Arts, the Council of the Royal Institute of British Architects, the Presidents of nearly every English provincial society, and innumerable artists and *savants* of distinction, published protests and signed petitions against the execution of any proposal affecting the integrity of the Hall—a masterpiece regarded by the whole cultured world as a cosmopolitan inheritance: Mr. Belcher being the only architect of eminence who could be cited as supporting Mr. Shaw's proposal. Mr. Norman Shaw's scheme had in the first case been passed over the heads of Sir Aston Webb and Professor Blomfield by the votes of the two sculptors on the expert committee, Mr. H. Thorneycroft and Mr. Goscombe John. But a sudden realisation of the nature of their position—consequent upon the universal outburst to which we have alluded—apparently caused the Finance and Memorial Committees to reconsider their programme. An atmosphere of uncertainty, even of misgiving, began to pervade their counsels, and they sought refuge in compromise; but, with the obliquity of mental vision peculiar to civic bodies when confronted by any vital problem in

æsthetics, they attempted to placate their opponents by offering to forego just those things that were of least importance, whilst retaining all that was vitally and essentially objectionable. Perceiving that Mr. Shaw's scheme was likely to bring upon them nothing but odium, the suggestion of a Mr. Cohen, deputy-chairman of the Finance Committee, was eagerly seized upon. This gentleman proposed the adoption of Mr. Shaw's scheme in so far as it related to the steps, but the substitution for the central figure of two flanking equestrian statues, one at each end of the podium. The particular meeting at which this proposal was adopted revealed extraordinary want of knowledge of the history of the Hall. Elmes, for example, was held responsible for a printer's engraving made seven years after his death.

The Memorial Committee, supported by the finance members of the Council, had next to consider the advisability of accepting Mr. Cohen's proposal. Meanwhile, so sensitive had the former body become, under the continued condemnation of the architectural profession, and more especially under the derisive contempt of the local public, that its deliberations were held in private—only a brief and entirely non-committal report being furnished to the Press. It was decided again to consult the expert committee, but the precise manner in which the opinion of the experts was to be obtained was not divulged. Subsequent enquiries showed that, beyond receiving a quite unofficial communication from Mr. Goscombe John, neither Sir Aston Webb nor Professor Blomfield were ever approached in reference to the matter. The attitude of the other selected experts toward the amended version of Mr. Norman Shaw's design was not made public, but ultimately, on February 22nd, the Memorial Committee recommended that an equestrian statue in plaster should be made and erected at the south-east angle of the podium—i.e., on the position advocated by Mr. Cohen.

Unfortunately for the promoters of this new scheme, the Finance Committee would have none of it. On February 24th they rejected the proposal to erect a plaster model, but still adhered to the introduction of the oblique steps. The cost of cutting the two holes into the podium and building the steps was estimated by the city surveyor at £2,600. Why the Corporation should be requested to undertake such work when once the latter is dissociated from the idea of a Royal Memorial, it is not easy to conceive. Perhaps the municipal authorities have an idea of wearying out professional and local opposition by dragging the matter on some months longer, but in this event they will find themselves much mistaken.

At a general meeting of the City Council on March 1st, the question of the steps was raised, but no definite action was taken, though several pointed references were made to the fact that whatever the Finance and Memorial Committees may propose must be ratified by the Council before it can become operative. The most important feature of the proceedings was the presentation of a petition against any tampering with the Hall, signed by eighteen of the most influential merchants in the city. The issue, therefore, has now reached a curious state of confusion. The next step lies with the Memorial Committee, but what line of action they will take it is impossible to foretell. Their dilemma is a double one. In the

first place, their enthusiastic championship of Mr. Shaw's scheme has been completely ignored by the Finance Committee, who mutilated the design in the most drastic fashion. Secondly, their disregard of expert protest being based on a professed reliance on lay approval, the petition of eighteen of the most influential and representative Liverpool citizens removes the last pretext for laying hands on Elmes's work at all. In addition to all this, the indisputable evidence of drawings proving the present design of the podium to have been Elmes's first intention of Cockerell's ultimate conception has been brought home to the Liverpool public in the most convincing fashion through a local Press controversy in which Professor Reilly has given the necessary data with a lucidity fatally damaging to the municipal case for interference with the structure.

For no valid reason, politics appear to have become mixed up with the question, and the voting in the Committees has on more than one occasion been apparently on merely party lines. An unfortunate proposal to remove the Beaconsfield statue has in some obscure way further embittered the controversy.

In short, the real object of the memorial has by now become strangely obscured; the authorities responsible for the ill-advised selection of the site being, apparently, bent on cutting steps in the podium in order to justify the expenditure of time and money already involved. The irony of the situation needs no emphasis.

The New Rooms at the National Gallery.

ON Friday last the new rooms at the National Gallery were thrown open to a large crowd of privileged visitors, admitted by invitation cards. The rooms, which form a very important addition to the interior space, present nothing very remarkable in an architectural sense, the main object being to show off the pictures well, the pictures themselves forming the decoration. The doorways have casings of grey marble, the ceilings are white, with a certain amount of modelled ornament in the shape of wreaths, etc., of a not very remarkable character; we should have preferred to have seen the soffits of the ribs treated in a rather more severe manner instead of the rather ragged-looking foliage ornament in high relief. All this detail, in fact, is somewhat commonplace, and might easily have been otherwise; but it may be said at all events that there is nothing in it to distract attention from the pictures. But all the rooms show the most important merit that a picture-gallery can have, that of an excellent light, obtained through skylights in the rake of the roof; the old heresy of having a flat glass roof with an exterior skylight above, which has made havoc of the lighting in some picture galleries, being now, one may hope, entirely discredited. In the long room at the end of the suite the light is so good that some old favourites, Gainsborough and Wilson landscapes especially, seemed to come out with quite a new effect. The pictures have been most effectively arranged and grouped, and Reynolds's monumental work, "Three Graces adoring the Bust of Hymen," hung so as to appear as the close of the vista through the whole suite of rooms, fills worthily that commanding position.

Architects as Artistic Draughtsmen.

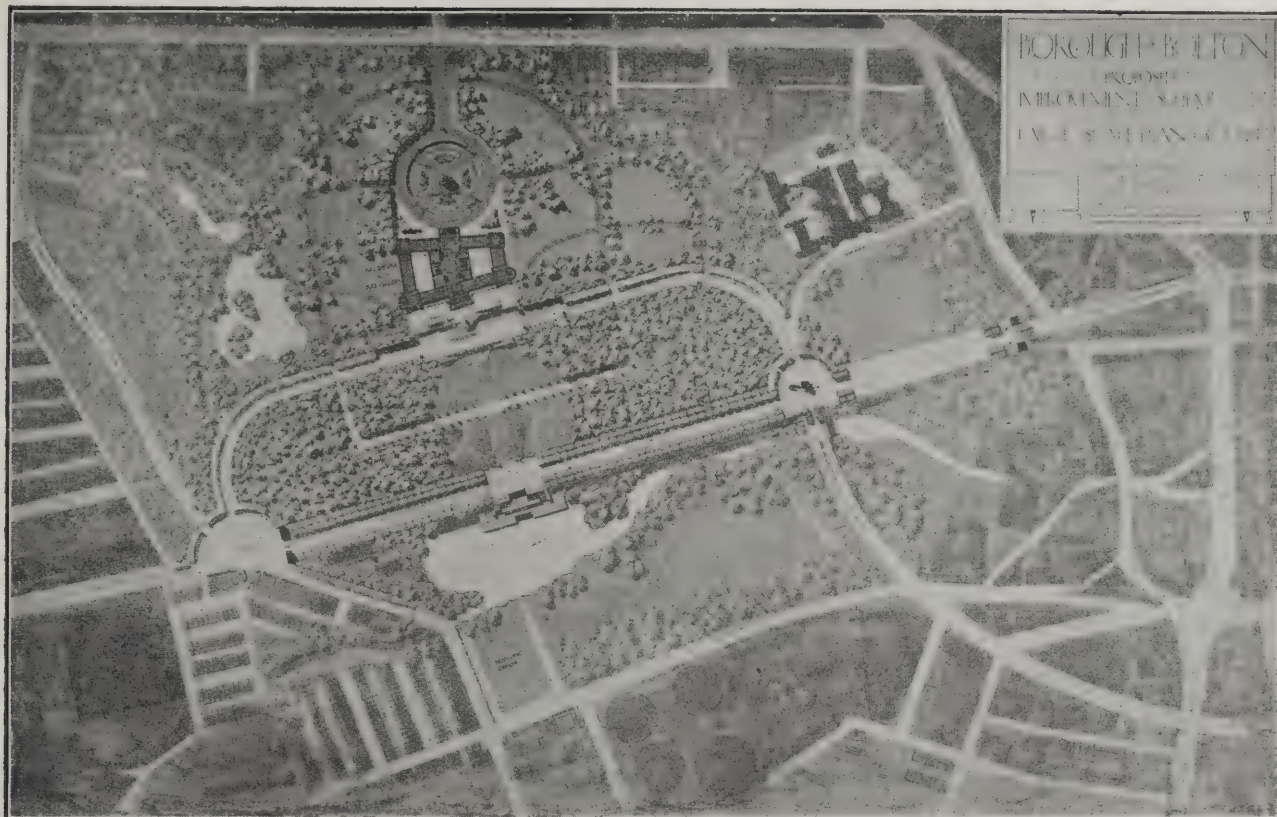
IN the March issue of *The Architectural Review* are two finely illustrated articles concerning the quality of draughtsmanship displayed by the greatest of English architects—Inigo Jones—and by one of the most brilliant architectural professors of modern times—C. R. Cockerell. Four magnificent drawings by the latter are reproduced in the issue. They are all of conjectural restorations of Ancient Rome, and depict respectively the Temple of Capitoline, the Temple of Trajan, the Ulpian Basilica, and the Forum of Nerva. The accompanying letterpress is by Mr. R. Phené Spiers, who says that these drawings, with several others, were found in the vaults of Old Burlington House, where they had probably lain since the property of the Academy was removed

(about 1869) from the National Gallery to their new quarters in Piccadilly. Inigo Jones's great skill is shown by a portrait drawn by himself, and a cartouche with figures around, forming part of the Burlington-Devonshire Collection at the Royal Institute of British Architects. These drawings, as Mr. J. Alfred Gotch points out in an article accompanying the illustrations, exhibit a vigour and incisiveness which few of our best painters could exceed. There are between thirty and forty drawings in the Institute collection which may reasonably be considered as the handiwork of Inigo Jones, and they point the same moral—that he drew best when free from the trammels of architectural instruments. This does not necessarily detract from his fame as an architect, although it is opposed to the thesis that fine architectural draughtsmanship produces fine architecture. Inigo Jones must have had by nature a keen sense for proportion, which he cultivated when he traversed Italy with Palladio's "Architecture" in his hand. It was there that he acquired his style of drawing and his manner of making sketches, which bear a curious resemblance to those of the many Italian architects of the period, great and small. No wonder, with his gifts that way, that he acquired a facility in freehand when wandering through Italy; but that he studied architecture as well is proved by the notes he made in his "Palladio" as he went from one famous building to another.

There are many other attractive features of the March *Review*, among them being an excellent article by Mr. Walter H. Godfrey on Sir Thomas More's house at Chelsea (which offers a most interesting study in Elizabethan planning), and the concluding portion of Mr. Arthur Keen's article on "The Ceilings of the City Churches." Current architecture is well represented by a series of photographs of the new home of the Institution of Electrical Engineers on the Embankment (where some clever work has been done by Messrs. H. Percy Adams and Charles Holden); Royal Exchange Buildings, by Messrs. Ernest George and Yeates; St. Chad's Church, Longsdon, and the organ at the St. Paul's Girls' School, Hammersmith, by Mr. Gerald C. Horsley; and a design for a Church of Humanity, by Professor Reilly; while, occupying the entire Town Planning Supplement, is a fully illustrated article on the Ruislip competition.

Obsolete Phraseology in Specifications.

THE designation of obsolete materials in specifications is a grievance that the builders are evidently "nursing" to keep it warm. Mr. James S. Holliday put forward a powerful plea for reform in the course of his interesting lecture recently delivered before the Institute of Builders. His subject, as will be seen from the extracts given in another part of the present issue, was "Timber: Its Growth, Diseases, Seasoning, and the Principal Uses of its Most Important Kinds," and he found a legitimate occasion for remarking that while specifications should define what timber may be used, and so convey to the mind of the contractor what is wanted, this unfortunately is what many of the clauses do not achieve. Those familiar with the working of the building trade, he said, are aware that the out-of-date phraseology used in many specifications is sadly in need of reform. Disputes and misunderstandings are constantly arising because timber is specified which it is impossible to obtain, while the kinds that very often are most suitable and are easily obtainable are not specified at all. The ports which send us the best sawn carcasing and joiners' timber—Archangel, Petersburg, Soderhamn, Gefle, etc.—are not those from which the logs of timber they have superseded used to come; and whereas in the past the ports of origin were limited to about a dozen, there are now about a hundred places in Russia, Sweden, Norway, and Prussia, from which sound usable fir is exported. Moreover, Mr. Holliday points out that as the timber imported at the present time is not nearly so perfect as in former years, the rigid application of the old standard of quality can no longer be justly applied; hence



THOMAS H. MAWSON, HON. A.R.I.B.A., ARCHITECT.

the many disputes that arise from the sheer impossibility of fulfilling in every respect quite literally such descriptions as "free from sap, shakes, large and loose knots, and other defects." It would seem that the pick of the world's timber supply has been used up, and the proportion of wood that satisfies the demand that it shall be free from defects is so small as to make its cost exceedingly high. All this is quite well known to most architects, who, while adhering to the old inappropriate terms of specification, are willing that they should be reasonably construed. This, however, is an unsatisfactory position, both for the architect and the builder, tempting the one to stringency, and the other to laxity. Of course, in the majority of cases, neither the one nor the other will give way to such temptations; but it might be possible so to revise the common phraseology of specifications as to put the matter on a sounder basis. Conference between accredited representatives of the parties chiefly concerned—the architects, the builders, and the timber merchants—should make short work of the difficulties to which Mr. Holliday has so usefully drawn attention.

Garden Streets Out of London.

UNDER this heading Captain Swinton, of the London County Council, writes to the *Times* to caution Sir John Benn against forming hopes that, in the event of the proposed new main roads out of London being carried out, there will be an extensive recoupment of the outlay from the frontages of these roads. One express purpose of the roads, he points out, will be to carry a great amount of fast long-distance traffic, which must be accompanied by noise and dust, concomitants which will not induce people to rush to live close to the roads. The actual margins of the roads would from this cause be depreciated rather than enhanced in value as building land; people may rush for convenience to live near the road, but not on it. Captain Swinton therefore advocates "Garden Roads," with the building kept back. The idea is a delightful one, and would add a new beauty to

London approach roads; but it would mean an increased expenditure in the purchase of land, possibly without any compensating return; for the gardens, if they were to be regarded as part of the frontage tenancies, would be as much depreciated by the noise and dust as the buildings would have been. However, the idea in itself is a fine one, and worth keeping in mind.

Proposed Improvement Scheme for Bolton.

WE publish the ground plan and a view of a fine improvement scheme for Bolton. The book in which this is described and illustrated, and which is entitled "Bolton: A Study in Town-Planning and Civic Art," is written by Mr. Thomas H. Mawson, Hon. A.R.I.B.A., Lecturer on Landscape Design at the University of Liverpool, who, we presume, is responsible for the general lines and idea of the scheme, which is illustrated by some fine drawings by Mr. Robert Atkinson.

The plan, given above, shows the scheme for transforming what we gather to be an existing park into "a civic composition," by forming a level causeway along the front of the park, as the base of the composition, and forming on the higher ground beyond it a culminating architectural feature in the shape of a large building, on classic lines, to be utilised as a museum and art gallery for the town. The perspective view shows the Causeway and its approach, with the Art Gallery in the distance. The scheme is certainly a fine one.

Other suggestions are illustrated in the handsome volume devoted to the subject; among them a view of a proposed new street axially facing the centre of the town hall, and leading up to it. This also looks well in the drawing, and would be an improvement to the city, though we cannot share the enthusiasm of the writer as to "the noble town hall," that structure being, in fact, a very commonplace piece of conventional classic architecture; but such as it is, it forms naturally a centre for a new arrangement of the site around it. The whole publication is exceedingly creditable to its authors.

DRY ROT PREVENTION AND TIMBER SEASONING.

BY JAMES S. HOLLIDAY.

In the course of a lecture on "Timber: its Growth, Disease, Seasoning, and the Principal Uses of its Most Important Kinds," delivered to the Institute of Builders, Koh-i-Noor House, Kingsway, on March 1st, Mr. James S. Holliday, Senior Vice-President, gave some valuable practical hints on the prevention of dry-rot, and also described a process of seasoning which he has successfully employed.

HAVING summarised the natural history of timber, and the defects and diseases to which it is subject, the author continued: But the woodworker is more interested in those diseases which attack converted timber, and of these the most important is dry rot. The spore of fungi germinates on damp wood, provided some alkali is present—such, for instance, as ammonia fumes in stables—then, under the influence of warm still air—i.e., absence of ventilation—its spawn threads spread, not only in all directions through the wood, forming greyish white cords and flat caked mosses of felt on its surface, but even over damp surfaces of brickwork or soil, and thus to previously unaffected timber. The fungus destroys the surface of the timber, lessening its weight, causing it to warp and crack, until at length it crumbles up when dry into a fine powder, or, absorbing any moisture, becomes a soft cheese-like mass.

Imperfectly seasoned timber is most susceptible to dry rot. The fungus can be spread by its spawn, and we are told that this can be carried by the clothes, or even by means of the workmen's saws, to other wood that is sound, if the diseased timber be left near it.

The Prevention of Dry Rot.

On the other hand, dry timber, kept dry, is proof against dry rot, and exposure to really dry air is fatal to this fungus. (If only the ends of properly seasoned beams, which are inserted in brick walls, were to be previously creosoted or treated with some other antiseptic, it would afford a most effective protection against dry rot.) Probably we hear more about dry rot in newly erected buildings now than in former years. It is a defect which has caused a great deal of trouble, and has given rise to much litigation. The author suggests, as a practical builder, that to a certain extent the greater prevalence of the disease may be due to the altered conditions of building. Formerly a reasonable time was allowed for the erection of buildings, whereas in the present day expedition seems to be the essence of most contracts. This means that before the building has had any time to rid itself of the immense amount of water used in its erection, timber (generally selected by the architect for brightness of colour, and consequently of recent importation) is used for the partitions, floors, roof, etc., the ends of which are fixed in and against the walls. A warm, damp atmosphere surrounding the wood—as for instance, under a floor immediately over the ground—and unventilated cellars are favourable to the spread of the disease. The author suggests that no timber should be fixed in a position so that the moisture in and around it cannot be easily evaporated. No wood slips should be built into the top of the concrete without being creosoted, and no boards should be laid directly on the concrete and afterwards covered with linoleum, etc. All the space under wooden floors should be cleared of vegetable or fungoid growth, and covered with concrete, and this should be left as

long as possible. No wooden pegs communicating with the earth beneath should be left in and through the concrete. Inlets should be formed in walls for the introduction of fresh air underneath all ground floors, and also for cross-currents. The space under floors should be cleared of all shavings and pieces of wood.

Antiseptic Treatment of Timber.

Allusions to various substances employed in preserving timber and other vegetable fibres from decay are frequently met in the writings of the ancients. Tar and pitch were used for painting or smearing wood from periods of the most remote antiquity. Greek and Roman authors narrate that the astringent portions of the oil from olives, and also of that from cedar, larch, and juniper, were used for the preservation of articles from decay, or from the attacks of insects. The magnificent statue of Zeus by Phidias was erected in a grove at Olympus where the atmosphere was damp, and the wooden platform upon which it stood was therefore imbued with oil. The famous statue of Diana at Ephesus was of wood, and Pliny states that it was saturated with oil injected into a number of small orifices bored in the woodwork. The same author remarks that wood well rubbed with oil of cedar is proof against woodworm and decay.

Mr. Boulton, in his work on antiseptic treatment of timber, says that not until the eighteenth century can anything beyond the merest trace be detected of serious research into the causes of decomposition. It is stated that during the struggles of Great Britain with the host of her adversaries the prevalence of dry rot in the timbers of the men-of-war vessels assumed the proportions of a national calamity, and that various experiments were tried of injecting resinous vapours, and the salts of copper, iron, zinc, etc.

But it is since the birth and growth of the railway system that antiseptic treatment of timber may be said to have received its most important development. The original stone blocks and other solid supports at first used on the permanent ways were found to be too rigid, and had to be replaced with a more elastic material. Wood sleepers decayed rapidly, and hence a process of antiseptic treatment for prolonging their life had to be considered.

By the year 1838 several systems of antiseptic treatment were before the public, and competing for the favour of engineers, viz., corrosive sublimate introduced by Mr. Kyan; sulphate of copper, introduced by Mr. Lloyd, and heavy oil of tar (afterwards termed "creosote") introduced by Mr. Bethell.

As early as 1756 attempts were made in England and America to inject into or impregnate timber with vegetable tars or with extracts therefrom, but the practical introduction of the process is due to Mr. John Bethell. His celebrated patent, dated July, 1838, does not mention the words "creosote" or "creosoting." It contains a list of no fewer than eighteen various substances, mixtures, or solutions, and

among them a mixture of coal tar and dead oil distilled from coal tar; which is the origin of the so-called "creosoting" process.

Pure creosote is the product of the destructive distillation of wood. Commercial oil of creosote is a dark brown liquid obtained from coal tar, of which it constitutes from 20 per cent. to 30 per cent. It is produced by distillation, and consists of the light and heavy oils of tar, but its composition is very variable.

There are several patent wood preservatives and antiseptics on the market, among which are carbolineum avenarius and "Solignum," for both of which it is claimed that they preserve wood and protect it against fungus, dry-rot, and the ravages of insects and vermin.

Creosoting.—The benefits of creosoting are of a threefold nature—that is to say, three different actions are set up—(1) Physical action. A very greatly increased solidity is obtained by choking the pores, the wood becoming more or less solid blocks. (2) Physiological action. The smell of creosote imparted to the wood prevents germinal life, which is well known to be destructive to timber, being developed within it. (3) Chemical action. The tar acids in the creosote are antiseptic, and also cause some changes in the wood, which are stated to play an important part in the preservation of timber.

Seasoning, Natural and Artificial.

It is generally thought that natural or air seasoning gives the best results, for which purpose the wood is piled in a seasoning yard, protected so far as possible from sun and rain, but with air circulating freely on all sides of each log. Bad ventilating is sure to cause dry rot; stacking timber vertically or at an angle is inclined to produce unequal drying; the planks should be stacked flat or on edge.

Various processes for the artificial seasoning of wood have been practised since time immemorial; the Romans, for instance, having for this purpose resorted to soaking timber or burying it under corn.

Artificial seasoning systems have been adopted by several contractors in London, the object being to make fresh imported timber usable, instead of having to stack it for the long periods required by natural seasoning. One advantage gained by this method is that valuable space may be utilised that would otherwise be occupied by large piles of timber in the process of natural seasoning, and another that the locking-up of capital is avoided.

The author described a method of patent artificial seasoning adopted by his firm, as follows:—A stoving building is erected about 26 ft. by 8 ft. (inside measurements), built in brick and lined with cement, with a flat fireproof roof of concrete, and a pair of teak doors closely fitted at one end. Three openings, 12 ins. in diameter, form ventilators in the roof, in which there are also two small holes for lowering a registering thermometer through. Trolley lines are laid on the floor, so that the timber can be loaded on to the trolleys outside and run into the stove. Under the floor a chamber is formed with an arrangement for superheated steam, which is conducted from an adjacent boiler through a system of pipes to discharge-pipes which distribute the steam evenly in the main chamber. The timber is carefully stacked on the trolley, allowing space all round same.

The trolley is then drawn into the chamber, the doors are secured and the ventilators closed. Steam is then admitted for a certain number of hours, and subsequently superheated steam for a further

number of hours. During the whole process, the temperature must be constantly tested, and regulated to conform to a tabulated list, which, however, varies according to the thickness, kind, and initial state of the timber, and the atmospheric conditions prevailing, all of which factors have to be taken into consideration.

The required temperature (which it may be necessary to raise to 225 deg. Fahr.) must be arrived at gradually, sudden changes being carefully avoided. The temperature can be regulated in various ways, either by slightly reducing or slightly increasing the amount of steam admitted, by cocks on the superheater, or by slightly opening for short periods one or more of the ventilators. With care the desired temperatures at the required periods can be obtained within three or four degrees. The time of steaming varies between thirty and thirty-six hours, during the whole of which supervision is necessary.

When the proceses of steaming and superheated steaming are completed, the supply of steam is shut off, the ventilators

are fully opened, and the fire under the superheater allowed to die out, so that the temperature in the chamber may gradually cool.

Volumes of vapour are at first emitted, but these rapidly diminish, and cease altogether within about twenty-four hours after steam has been shut off. The temperature is then tested, and if it is within about 15 degrees of normal, the doors are slightly opened to assist in ventilating the chamber. The doors, however, are not fully opened before thirty-six hours after steaming, or until the temperature inside the chamber is within five to ten degrees of that outside.

The timber is then removed into sheds, and providing the treatment throughout has been properly carried out, within about fourteen days' time the timber is equivalent to seasoned wood.

Timber is not diminished in bulk or decreased in strength by this process; in fact, the subjoined particulars of tests carried out by the author go to show that if anything the strength of timber is increased by the process.

The theory of the process is that moisture in the timber is expelled by its conversion into a more fluid state, by opening the pores and ducts of the fibres, and allowing steam and then superheated steam to permeate the material, and the heat in the chamber and the timber will assist in expelling the moisture, etc., after the steam is shut off. We find that resin in soft woods flows to a small extent, but this is not of great importance. Also, any shakes that may be in the timber are slightly increased, but the process does not produce shakes.

As a rule we find that the best results are obtained with freshly cut timber. The author believes this system is similar to the artificial systems of seasoning known as Sturtevant's and Erith's.

Results of Tests on "Stoved" and "Unstoved" Yellow Deal.

Size	Span	Initial crack	Final fracture	Stoved Un-	Av
2½in. by 4½in.	3ft. 6in.	2'25 tons.	2'6 tons.	—	—
"	"	2 tons	2'9 tons.	—	2'75
"	"	"	2'6 tons.	—	—
8½in. by 2½in.	"	1'4 tons.	2'75 tons.	—	2'675
"	"	7'5 tons.	7'5 tons.	—	—



DOORWAY IN BUSINESS PREMISES, WIGMORE STREET, LONDON, W.
WALTER CAVE, F.R.I.B.A., ARCHITECT.

THE LEGAL POSITION OF
AN ARCHITECT.

BY A LEGAL CONTRIBUTOR.

The position of an architect in relation to a contract is somewhat peculiar. In a sense he acts as the servant of the employer whose interests he is specially retained to guard. The contractor, who knows this, must not, therefore, be quick to accuse him of bias. A contract by which the plaintiff undertook to construct a dock for the defendant company provided that any dispute between the company and the contractor as to the meaning of any part of the contract, or as to the quality or description of the materials to be used in the works, should be referred to the company's engineer as arbitrator. A dispute arose whether the contract required the interior of a certain embankment to be made of stone, or whether rocky marl was allowable, so that, if the contractor, by the direction of the engineer, used stone, he would be entitled to be paid for it as an extra. A correspondence took place between the contractor and the engineer, in which the engineer stated his view to be that the contract bound the contractor to use stone, and that it was not an extra. The company then referred the dispute to the arbitration of the engineer. After this reference, and on the day for which the first appointment had been made, the engineer wrote to the contractor a letter in which he repeated his former view. The plaintiff brought his action to restrain the company from proceeding further with the arbitration. It was held that, considering the position of the engineer, who, as engineer of the company, must necessarily have already expressed an opinion on the point in dispute, his writing after the commencement of the arbitration a letter repeating the same opinion would not disqualify him from acting as arbitrator, unless, on the fair construction of the letter, it appeared that he had made up his mind so as not to be open to change it on argument.

In an action against Leeds Corporation, 1902, a named arbitrator, who was an official of the Leeds Corporation, wrote a letter in which he said that the claim of the contractors against the Corporation was outrageous. The contractors brought an action against the Corporation, which the corporation applied to have stayed pending the arbitration. The contractors opposed this. It was held that the arbitrator was not disqualified. The following passage from the judgment of Lord Collins (then Master of the Rolls) is not unimportant. Dealing generally with the position of an engineer or architect, he said: "The parties have not agreed—that is the plain English of it—for an impartial arbitrator, because the person they have agreed upon as arbitrator is one who, it may be presupposed, may have formed, to the best of his ability, and with all the information that was at hand, an adverse opinion to one of the parties upon the points in dispute."

The mere fact that an engineer holds shares in the company who is employing a contractor does not affect his position, or expose him to a charge of partiality. Where, however, there is some agreement between the engineer and the employer which is likely to prejudice the contractor, the contractor is entitled to know of it.

If an architect's certificate is a condition precedent to the contractor's right to payment, the contractor, on abandoning the contract, is not entitled to payment for work done without producing a certificate of the architect, unless he can show that

the certificate has been collusively withheld. Dealing with the position of a surveyor, Lord Esher said:—"Where a surveyor is put into the position to give a certificate, I do not say that he is an arbitrator, but he is an independent person. His duty is to give the certificate according to his own conscience and according to what he conceives to be the right and truth as to the work done, and for that purpose he has no right to obey any order or any suggestion by these people who are called his masters. For that purpose they are not his masters. He is to do that on his own conscience wholly independent of them, and to act fairly and honestly as between them and the contractor." Care should be taken to make payment contingent not only on the character of the work, but on the character of the machinery supplied for the purpose of fulfilling the contract.

A manufacturer agreed "to provide a fourteen-horse engine, a sixteen-horse boiler, with fittings and everything complete for £260, and to deliver and erect the same to work." It was a further term of the agreement that payment of the last instalment should be made when the purchaser was "satisfied with the work." It was held that these words related to the work of erecting the engine, and not to the price of the engine itself.

As a general rule, the contract provides that the employer shall only be liable to pay for extras ordered by the architect, and included in his certificate. For instance, a clause is generally inserted to the effect that the contractor shall have no claim for extra payment beyond the contract price in respect of any work done by him for the corporation, unless previous to the execution of the alterations he shall have received a written order from the engineer expressly stating that the work is to be the subject of an extra charge, and then only for the amount which the engineer in his final certificate shall certify to be due to the contractor in respect of such alterations and additions. The advisability of having an express provision on this question will be manifest. It may be mentioned that where an architect gives his final certificate in respect of a contract which includes extra work, the final certificate is conclusive, and neither party can raise the question whether or not there was sufficient order in writing. Where the contract contains no special provision for ordering extras, but states that the contractor shall be paid for all extras at the price fixed by the engineer, it seems that the grant of a final certificate in respect of work that includes extras is conclusive. In such a case the engineer has power impliedly to determine what are extras under the contract, and his decision on the point cannot be called in question. A later decision, however, brings out the difference in this respect between a final and a progress certificate. The contract provided that there should be no extras without the engineer's written order. It also provided that no allegation by the contractors of knowledge of or acquiescence in deviations or additions on the part of the employers should be accepted or available as equivalent to the engineer's certificate, or in any way supersede the necessity of such certificate as the sole warrant for deviations or additions. While the work was proceeding the contractors were allowed to erect girders of a heavier weight. The actual weights were entered from time to time in the progress certificates granted by the engineer. When the work was completed, the contractors claimed a sum in excess of the contract price for the extra weight of metal supplied. It was held

that the progress certificates were not written orders, and that the claim was therefore excluded by the contracts.

PICTURE EXHIBITIONS.

The Fine Art Society.

At the rooms of this Society there is on view a collection of landscapes in oil and water-colour by Mr. R. B. Nisbet, which is of more than average excellence. The water-colours are on the whole the best; the three first in the catalogue—"The Lonely Shore," "Breezy Upland," and "A Day in July"—are very fine works in a broad style, the sky in the second-named being especially good. Nos. 51 and 61 show that the artist can treat sea well also. Among the oil-paintings we may direct attention to "Cumulus Cloud," and "Summer Morning in Eyemouth Bay." The water-colours by Mr. E. Wake Cook, in another room, will very likely prove the more popular collection; but, though they contain a great deal of highly finished and delicate workmanship, they are too "pretty" a style for our taste. In the architectural subjects, however, of which there are several, including a view of St. Mark's, the buildings are very well and carefully treated, both as to drawing and colour.

Messrs. Dowdeswell's Gallery.

At this gallery there is a collection of water-colour drawings of "Old-world Gardens," in which also a good many representations of old buildings are included, by Mr. E. Arthur Rowe. Garden scenery in water-colour has become rather a fashion of late, and Mr. Rowe is an accomplished artist in this class of subject; but exhibitions of this kind tend to have rather a sameness about them. The rather grotesque clipped-tree gardens of Leven Hall, well known in pictures, are well represented, and the standard of execution throughout is excellent; but it is a kind of picture one is getting a little tired of. Mr. Eland's water-colour drawings on vellum of heads of "Beautiful Women," in the corridor of the same Gallery, have much charm and variety of character and expression, and have the merit of deserving their title, which is not always the case in exhibitions of this class.

ENGLISH WOODWORK.

In his lecture at Carpenters' Hall, London Wall, an "Joinery in Old London," Mr. Arthur Keen, F.R.I.B.A., pointed out that there were certain arts in which the English had always excelled, and artistic woodwork was one of them. He described the beautiful workmanship which was found in timber-built houses, the roofs of churches, and in panelling. A great part of the secret of such highly decorative work might be found, he said, in the fact that the men who made the wonderful roofs that were to be seen in Suffolk and Somerset, and in other parts of England, had been taught their business as designers, and not merely as workmen. They worked in a traditional way, and did the things which their fathers had taught them, with such improvement as their own skill and imagination led them to. Carpentry as an artistic craft practically died out with the advent of the English Renaissance, as it was called, under Inigo Jones and Wren, and it was worthy of note that of the many churches built in London by Wren, not one of them had an open timber roof.



Entrance Front.



Garden Front

A HOUSE ON THE SURREY HILLS. HAROLD C. TRIMNELL, A.R.I.B.A., ARCHITECT.



HOUSE AT WOLDINGHAM, SURREY. HAROLD C. TRIMNELL, A.R.I.B.A., ARCHITECT.

SOME SURREY HOUSES.

The accompanying illustrations show three houses in Surrey which have recently been erected from designs by Mr. Harold C. Trimnell, A.R.I.B.A.

The house shown on the preceding page occupies a very fine site more than 800 ft. above sea-level. The facing bricks are of a purplish brown colour, with sand-faced Crowborough stocks. The jointing is raked out for a depth of about $\frac{3}{8}$ -in., and left. The timbered portion of the house has the framing of English oak—adzed-faced and left natural—which has toned to a beautiful silver grey in a very short time. The whole of the external joinery is of English oak. The panels between the framing are of cement and sand, 2 ins. thick, and finished with an uneven sand face to within $\frac{1}{8}$ -in. of the face of the timber, and all distempered a cream colour. The roofs are of a dark brown colour, sand faced, and rough in texture. The valleys are worked circular. Internally most of the joinery is of Kauri pine—stained a dark brown and wax polished. A considerable portion of the walls is panelled. Floors are of wood blocks (maple), stained a dark brown colour and polished. The house was only built about two years ago, but already looks as though it had stood a century. The general contractors were Messrs. H. and E. Waters, of Forest Row, Sussex.

The house at Woldingham, of which two views are given above, also occupies an elevated site, commanding extensive views. Bricks are Sussex brindle stocks, of great variety of colour, from a rich red to a purplish brown. The oak timbers are sawn from Sussex oak, and are for the most part 6 ins. thick, varying in width from 7 ins. to 9 ins., and the panels in between are of cement and sand, finished to an uneven face. All the external joinery is of oak, and the windows are lead-glazed with steel casements. Mr. Wm. Tout, of Hendon, London, was the builder.

The house at Kingswood, illustrated on this page, is of similar construction to the others. The roofing tiles are of a most pleasing colour, in a variety of shades, from a red to a dark brown or black. They are from Sussex, and being exceptionally rough in shape and texture, bear an appropriate resemblance to the old make of tile. All external joinery is of oak. The general contractors were Messrs. A. Peskett and Co., of Crawley, Sussex.

OBITUARY.

The Late Mr. Howard Colls.

The late Mr. J. Howard Colls, joint chairman of Messrs. George Trollope and Sons and Colls and Sons (Ltd.), of London, E.C., left estate which has been proved at £419,797 gross. The testator bequeathed: £500 to the Camberwell Provident Dispensary; £300 to the Camberwell and Dulwich Pension Society; £300 to the Builders' Benevolent Institution; £300 to the Builders' Clerks' Benevolent Institution; £200 to the Church Lads' Brigade, Catherine Street, Strand; £200 to the Evelina Hospital for Sick Children. The following bequests are made to employees or former employees of his business: £200 each to H. T. Challacombe (for many years manager of his Dorking business), E. Brooks, and O. Newling. £100 each to T. J. Collins, H. H. Luetchford, and J. J. Wilson. 750 £10 Ord. shares and 50 £10 Pref. shares of Messrs. George Trollope and Sons and Colls and Sons (Ltd.) to Wallace Elliott, a fellow director. The duties payable on the property will amount to about £54,000.

BOOK NOTICES.

Paints for Steel Structures.

The fifth edition, revised, of this breezy little book finds the author more firmly convinced than ever of the soundness of the hypothesis upon which he has based his investigations. That hypothesis is best stated in his own words: "The theory that oil, or the binder, is the life of paint—that is, the thing that makes it wear—is misleading, and has been the cause of most of the blunders and failures with it in the past. An excess of linseed oil in the paint is as much an adulteration of paint as the introduction of useless or harmful pigment. We work upon the hypothesis that the solids are coefficient with the liquids in producing the best materials, and that the secret, if there be any, lies in the proper adjustment or determination of the amount and kind of each needed to produce a perfect product." Elsewhere he quaintly says that "pigment is the objective element and liquid the subjective element in it. The pigment is the male principle; liquid, the female." The book, while written in a decidedly



HOUSE AT KINGSWOOD, SURREY. HAROLD C. TRIMNELL, A.R.I.B.A., ARCHITECT.

entertaining style, and sometimes verging on epigram, is informed with the practical wisdom accumulated or intensified by forty years' practical study, and is well worthy of the careful attention of all who are interested in its subject. A chapter on rust, in which the electrolytic theory is dealt with, is mainly by a professor of chemistry.

Paints for Steel Structures. By Houston Lowe. Fifth Edition, Revised. New York: John Wiley and Sons. London: Chapman and Hall, Ltd. 115 pages, 7½ins. by 5ins.

Well-boring.

With improved systems of boring available, wells as a source of water supply have assumed during recent years very considerable importance, not only in country districts, but in London, where many large firms have found it profitable and convenient to be independent of the Water Board for the water required in many industrial processes. This book deals almost exclusively with deep boring, the shallow dug wells being so subject to pollution and possessing so many other disadvantages as to render them virtually negligible in a modern treatise. A chapter, however, treating of dug wells, affords a useful introduction to the more important systems, British and foreign, which are described in detail. This, the second edition of a very useful book, contains much new matter, including a chapter dealing more particularly with American oil wells, while tables filling about 260 pages give particulars of many wells that have been sunk in this country.

Well-boring for Water, Brine, and Oil. A Manual of Current Practice. By C. Isler. Second Edition, Revised and Enlarged. London: E. and F. N. Spon, 57, Haymarket. Pages iii.—269, 8½ins. by 5½ins., ros. 6d. net.

The Geology of Building Stones.

The technical equipment of the architect is certainly incomplete unless it includes some degree of knowledge of geology. His view of sites and soils must be at least rather more than superficial, and about building stones it behoves him to know a great deal more than the merchant is likely to tell him, or than can be easily gathered by the "street geologist," as (we think) Kingsley termed the student of stone buildings.

In order to acquire sufficient knowledge for his special purpose, however, it is unnecessary for him to become a complete geologist, and therefore his endeavours to dig out from the too ample quarry of the general treatise the comparatively few materials he requires for the small temple of science which is all that he aspires to rear involve the waste of a great deal of time and energy. He will therefore be grateful to Mr. J. Allen Howe for placing in his hands a book that, while it gives him perhaps rather more matter than he is likely to find absolutely necessary to an adequate understanding of the subject from the point of view of practical utility, is nevertheless divested of most things that are clearly extraneous to this issue. The book, in fact, has been prepared mainly with a view to the requirements of students of architecture, and, of course, special attention has been given throughout to the materials found in the British Isles, although there are occasional references to some of the stones of other countries.

Careful descriptions of the various building stones, with indications not only of whence they came, but of where and how, in particularly noteworthy instances, they have been employed, are followed by useful chapters on "The Decay of Building Stone," and "The Testing of Building Stones," and there are appendices describ-

ing the chief granite quarries and giving classified lists of the larger sandstone and limestone quarries and the chief slate quarries, as well as a brief bibliography of useful books on geology. Many useful tables are included, and the maps and other illustrations have the merit of being distinctly useful.

The Geology of Building Stones. By J. Allen Howe, B.Sc., F.G.S., Member of the Committee on Building Stones and Mortar, International Association for the Testing of Materials. London: Edward Arnold. Pages viii.—455, 7½ins. by 5ins., 7s. 6d. net.

IN PARLIAMENT.

(By our own Gallery Representative.)

Rosyth Garden City.

The Lord Advocate has informed Mr. Ponsonby that the Local Government Board for Scotland would not themselves undertake the planning and erection of the residential portion of the naval base at Rosyth in the event of no satisfactory scheme being submitted for erecting a garden city. So far as the Board were concerned every endeavour was being made to secure that a housing scheme should be undertaken forthwith. He added that he was not aware of land being held up with a view to getting higher feu-duties.

Declining Employment in Slate Quarries.

The President of the Board of Trade, replying to a question by Mr. Ellis Davies, stated that the number of persons employed in slate mines and quarries declined from 17,793 in 1900 to 13,168 in 1909, or by 26 per cent. The figures for 1910 were not yet ready. No annual returns of the numbers employed in the building trades were collected, and they must await the results of the approaching census of population to obtain a figure comparable with that for ten years ago.

Royal College of Art.

Mr. Runciman informed Mr. Grant that the Committee appointed to inquire into the working of the Royal College of Art had not yet reported to the Board of Education, but they might be expected to do so shortly.

A Grievance of Scottish Measurers.

Mr. Watt asked the Secretary of State for War how many schedules for the work at Redford, near Edinburgh, were sent out to Scottish measurers; and how many of these were unutilised and the payments made on application forfeited. He also asked whether the right hon. gentleman was aware that the schedules were arranged according to the English system of measuring, and that this fact made it difficult, if not impossible, for Scottish measurers to utilise these schedules; and that Scottish measurers complained that all new work for his department in Scotland was arranged in this way; and would he take steps to have in future the Scottish work of his Department given out in the language of the country?

Mr. Haldane, in reply, said the form of bills of quantities supplied in connection with the tenders for the erection of the barracks at Redford had for many years been in general use for War Department building contracts without question. Quantities were issued to 24 Scottish firms, one Irish, and four English firms, of whom 11 Scottish and two English firms did not eventually tender. The reasons for their not tendering were unknown except in the case of one Scottish firm who gave the form of the bills of quantities as a reason. A representation on the subject was received some weeks afterwards from the Edinburgh Building Trades Association, and was under consideration.

New Post-Office at Newcastle-under-Lyme.

The Postmaster General has informed Mr. Wedgwood that negotiations on the question of the settlement of the building line of the proposed new Post Office at Newcastle-under-Lyme are still proceeding, and until they are approaching completion no date can be given for beginning the work. A period of about 18 months would be required to erect and finish the building.

A Bournemouth Contract.

Mr. Croft having asked whether the new Telephone Exchange at Bournemouth was being contracted for by a Bournemouth firm, having regard to the slackness of the building trade in the town, was informed by Mr. Dudley Ward that tenders were invited for this work by open competition, and the contract was secured by the lowest suitable tenderer, A. J. Colborne, County Road, Swindon.

OUR PLATES.

Mr. L. Holcombe Bucknell's design for a church tower, of which an elevation and a detail drawing are shown in our centre plates, was submitted in one of the Royal Academy competitions. The only conditions prescribed were the height of the cornice and the width of the nave, which, of course, regulate the dimensions of the tower. The introduction of the tripods above the pediment, the figures at the angles, the adaptation of the order beneath the turret, and the general scheme of ornamentation, show considerable originality of conception.

L.C.C. ART SCHOLARSHIPS AND EXHIBITIONS.

The London County Council are issuing a circular with respect to the scholarships they are prepared to award, in connection with both day and evening classes, to day students and artisans. There are (1) Not more than sixty Art Scholarships for full-time day students, thirty of which scholarships are to be allocated in the first instance to persons engaged in artistic crafts; and (2) Not more than 110 Evening Art Exhibitions open to persons engaged in or intending to engage in artistic crafts, forty of which exhibitions are reserved in the first instance for candidates who are less than 18 years old on July 31st, 1911. Free education, and a maintenance grant in accordance with the circumstances of each candidate, but in no case to exceed £50 a year, are implied in the scholarships, which are tenable for one year, with possible extension to two or three years. Application forms may be had from the Education Officer, L.C.C. Education Offices, Victoria Embankment, W.C.

PROFESSOR BERESFORD PITE ON THE ST. PAUL'S BRIDGE.

At the Carpenters' Hall last week, Professor Beresford Pite said that there was only one site upon which the architecture of a noble causeway could be planned, and that was upon the centre of the axis of the Cathedral. London would then be in a position to offer a vision unequalled by the atrium of St. Peter's at Rome, and, he ventured to suggest, passing even the fondest dream of Wren's great imagination. The opportunity had now come to throw across the river a causeway in a position which would dignify the City, glorify the memories of St. Paul's, and crown London with a great architectural achievement that would be well worthy of the metropolis.

SOME ARCHITECTURAL
ASPECTS OF TOWN PLANNING*

The initial movement of revolt against the slum and the unholy aspect of our streets was successfully urged by John Ruskin, Thomas Carlyle, and the small but enthusiastic band of enlightened spirits led by Charles Kingsley and Frederick Denison Maurice, and, later, as far as its town-planning aspect was concerned, by William Morris, whose artistic instincts were severely shocked by the harshness of the modern town, and who was able by the magnetism of his personality to bring to his standard many varied minds who had imbibed the enthusiasm of his teaching. But still nothing definite was done, and it was not until Mr. Ebenezer Howard drew some circles of a cryptographic character, and carried on a curious type of guerilla newspaper war with them, that town planning in its modern sense could be said to have had any existence. Of course, since then the architectural lantern slides of Greece and Rome and Paris, which were previously exhibited for quite other purposes, are now found of equal value in illustrating town planning.

Even at this stage, the measures passed by our Government, excluding some private Bills, dealt with housing of the working classes and some powers under the Public Health Acts. The corrupt Metropolitan Board of Works did a splendid service for the civic planning of London by the carrying-out of the Thames Embankment, which must find a place in any future scheme, and the clearing of many disreputable slums in the route of Charing Cross Road. The London County Council conceived the Kingsway and other improvements, and other authorities imbibed the notion of preserving open spaces in churchyards and elsewhere. Still, nothing of a definite character in relation to town planning was broached. It is curious to note that architectural societies up to this stage did practically nothing in their own interests or to advance those of the art consigned to their care, but occasionally and perfunctorily stepped in, or attempted to step in, when the spadework was done, instead of being among the prime movers and producing and discussing improvement schemes, which were in most cases left to the civil engineer and the estate agent.

At last the Garden City movement was fully in being, and, although it was at first treated as a mere "will o' the wisp" of a few cranks and philanthropists, it gradually took shape as a serious attempt to solve a difficult problem. Developing in a somewhat erratic manner, it nevertheless eventually succeeded in placing town planning on a substantial footing, and in impressing the philosophers of Westminster with a sense of further possibilities under Government inspiration.

The Town Planning Act at length arrived. We instinctively feel that if town planning is to be really successful architecturally, the profession generally must take a closer interest in it. The Ruislip Town Planning Competitions, so admirably brought about by the persistent efforts of Mr. F. N. Elgood, F.R.I.B.A., will undoubtedly remain a monument in the history of the movement. The Ruislip Competition was thoroughly justified by its results, but the author doubted whether town-planning competitions were likely to become general; for if the architects of a district or a suburb co-operate with the

object of pressing the local council into action, a scheme of some kind should take the field, in order that local problems and their solution may assume a definite practical shape. If this be so, competitors in any town-planning competition that may be launched may be greatly handicapped by a lack of that close knowledge of local conditions that a residence within the area concerned alone can give.

An important element in a town-planning scheme is the spirit of its inception. If it is merely economical in its aspect, and a quick return for the capital expended is the dominant aim, the final result of the scheme will be disappointing to all concerned.

Before a local authority actually prepares a town-planning scheme, it must satisfy the Local Government Board that there is a *prima-facie* case for making a scheme (Sec. 54, 2, and Schedule 5), and after making a formal application, must receive an authorisation for them to prepare one. A like authorisation is required to enable a local authority to adopt a scheme proposed by all or any of the owners of any land which may be the subject of a scheme. The putting into operation of Part II. of the Act depends upon the creation of local opinion as to the necessity thereof, and steady pressure must be brought to bear upon local authorities. It is obviously necessary, therefore, to create voluntary groups for the study of local conditions, and that all architectural bodies should co-operate in the preparation of practical schemes.

An initial obstacle in relation to streets is that of advertisement. The architect is anxious that his designs should be as unfettered as possible by existing structures. The client is equally desirous of exhibiting his wealth or his pre-eminence in relation to his neighbours or of advertising the business his building is to house. The commercial aspect of the question is so strong that to force upon the "business man" the practical consideration of what he has hitherto considered an abstraction is a difficult enterprise. Evidently the best means towards its achievement is, as Professor Beresford Pite has pointed out, that more architects should serve on local authorities.

Doubtful as the reception of the issues of town planning are to the public, still more so are they to our profession. The struggle of the individual against the collective interest was never better illustrated. With the proposals of Mr. Paul Waterhouse in relation to city architecture, reformers will ultimately agree. The freedom of the "artist" in our city architecture has had its day; we see its results and deplore them. We see ourselves practically reduced to the position of assistants to a borough architect in that province of our profession. Design, which we have hitherto regarded as peculiarly our own, in addition to the fetters with which Building Acts and local authorities have loaded us, seems a doleful fate even for the most unimportant acolyte in the Temple of Art. Yet it must be admitted that it is a fate we fully deserve; and, furthermore, it would accomplish much in the direction of better architectural education.

To the commonplace that architecture of the best type was produced in the good old days of uncontrolled practice, we must reply that conditions have changed, and the gradual advent of commercialism, which brought the modern architect in its train, has determined the close of that golden period. Art, in individual buildings under such a régime as Mr. Paul Waterhouse has proposed, may suffer in those few isolated cases where the archi-

tecs may be better artists than their official surveillants; but if matters are properly adjusted, the great artists in architecture should not lack complete and even better opportunities to exhibit their skill, as the inartistic client will have less influence on results.

Opinions on this aspect of town planning are greatly at variance in the profession. The initiators of the movement are for co-operation amongst architects, and there are even cries for a benevolent despot. The impatience of the architect to be untrammelled in the exercise of his art, and the indifference of the building owner to the whole question except as regards his insistence on effective advertisement, evidently point to the conclusion that in this matter, as in all others, a compromise must be arrived at if any proposal is to take practical shape. That compromise must involve some restriction upon architects and co-operation amongst them. A general scheme for the architecture of a street must be laid down by architects in the district, and duly imposed by all available means on the authorities; and the first building of artistic distinction nearest the agreed standard must be duly recognised, and form the main lines upon which the future street should be based. Adjoining structures should harmonise in mass and alignment of main lines, the general treatment and detail being left to the architect immediately concerned.

Gothic architecture has been lectured and written to death popularly. We must now endeavour to popularise modern work, point out its object, its interest, and its beauty to the public who build, and who now have no adequate notion of the difference between good and bad work. This has been successfully done in regard to country houses; why may it not be done for the town house, the shop front, and the warehouse?

The author's proposals, briefly summarised, are—To form voluntary groups of students interested in town planning, each group confining its attention to a definite area, and being dominated by the local architectural society or a parent group. The work of these groups would consist in the study of local conditions, and the preparation of a town plan and its popularisation locally, together with constant pressure upon the local authority within and without. The plan agreed upon to form part of any main scheme that would be considered the best by the local architectural society. The latter to endeavour to secure the local co-operation of architects, and also that of any local non-architectural societies likely to assist.

A Parsimonious Proposal.

Gillingham Education Committee being forced by circumstances to propose an addition to the education rate, it is very natural that some means of economising should be sought. Only one proposal having that object, however, was put forward. A member conceived the brilliant idea of reducing the fee of the Borough Surveyor for professional services from 5 per cent. to 2½ per cent., "seeing that he was already paid £26 as a retaining fee." The economist actually found a seconder, but there his success ended, for his ingenious proposal was defeated. Seeing that the estimate for the Borough Surveyor's fees for the ensuing year is said to be £126, their reduction by one-half would hardly have put the committee in a position of affluence; but they may be very willingly credited with a more dignified reason for rejecting so absurd a proposal.

*Summary of a paper read by E. J. Dixon, F.R.I.B.A. at a meeting of the Guild of Architects' Assistants, on March 7th, 1911.

FIRE PREVENTION NOTES.

Fireproofing School Buildings.

The report of the Departmental Committee on the cost of School Buildings contains fewer specific references to the question of fire prevention than the importance of the point would seem to warrant. The direct references to the subject are sparse and casual; but it may be contended, with some degree of force, that the due consideration of fire risk is implied throughout in the search for cheaper materials which was the Committee's chief concern. Fire-risks, however, are not expressly mentioned, as we think they should have been, in the terms of reference: in which case the Committee would not have treated them so lightly as they do, for instance, when they remark that, "The chief objection to wooden buildings is the risk of fire; but in country schools this risk is practically negligible so far as the safety of the scholars is concerned, if the building is on one floor and suitable means of exit to the open air by windows or otherwise from each room are provided; and as such schools would naturally be isolated from surrounding premises, there would be no general danger to the public. It is also possible to reduce this risk by the use of a non-inflammable wall-lining."

Windows as Exits.

In the above-given quotation, the italics, of course, are ours. If it is seriously intended that school windows are to be regarded as exits, they ought, perhaps, to take the form of supplementary doors with glazed upper panels, or some other modification of the so-called French window. If the Committee had any particular system in

mind, it should have been specified for the guidance of those to whom the expression "suitable means of exit to the open air by windows or otherwise" is likely to prove rather mystifying. Some explanation of this cryptic passage seems to be necessary, since it does not seem feasible to credit the Committee with such loose notions as might easily be read into their observation; which might in this way be interpreted to mean that, the school being upon the ground floor, it would, in case of fire, be easy to bundle the youngsters through the windows, especially through casements! which, after all, is perhaps what is intended. But it looks rather primitive.

"No General Danger."

Exception might reasonably be taken to the somewhat cavalier remark, in this same paragraph 57 of the report, that, "as such schools would naturally be isolated from surrounding premises, there would be no general danger to the public." The assumptions strike us as being quite gratuitous, and at the same time quite characteristic of the light-heartedness with which fire-risks are generally regarded, in spite of the many terrible proofs of the folly of harbouring such lax views, and the danger of fostering either a false sense of security, or of confirming the general habit of "trusting to luck." That country schools are "naturally isolated from surrounding premises" is much too large a generalisation; and, in any case, a wooden school well alight during a strong wind must be indeed isolated to be innocent of danger to other buildings. If wooden schools are to be encouraged, it will be necessary, we urge, in the interests of the children—to

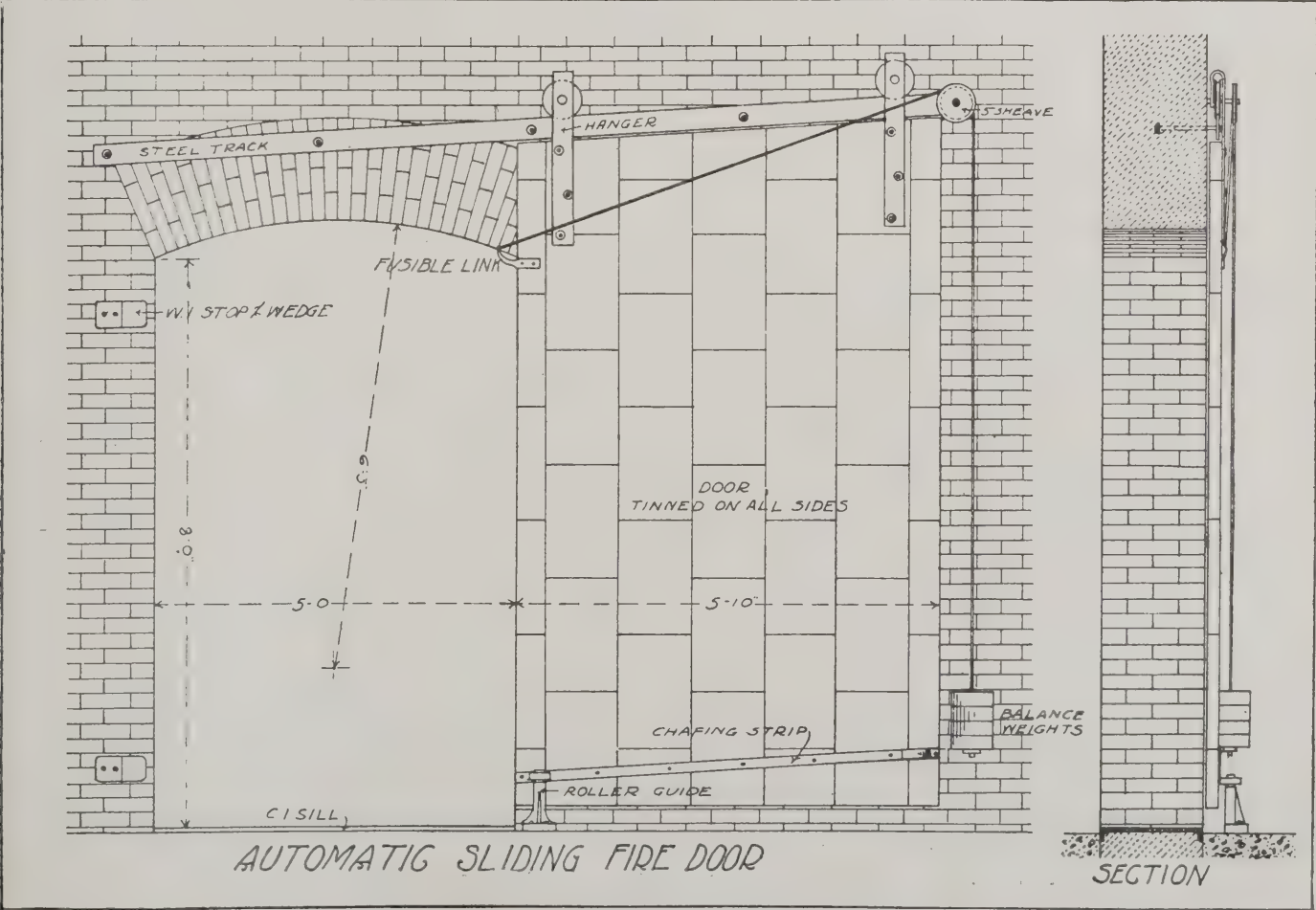
whom we can by no means agree that "this risk is practically negligible"—and of neighbouring properties, that the risks from fire shall be more carefully taken into account than the report encourages any belief that they will be. We commend, however, the (rather half-hearted) suggestion of "a non-inflammable wall-lining."

Casual References.

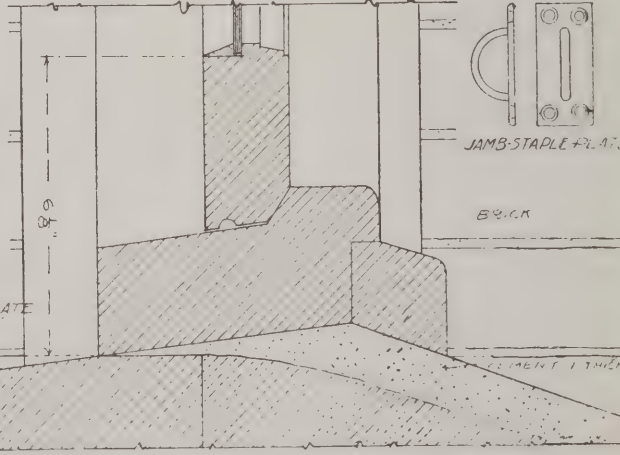
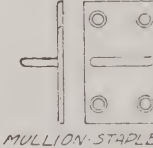
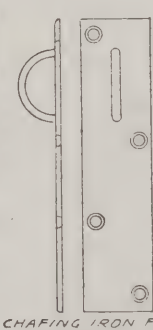
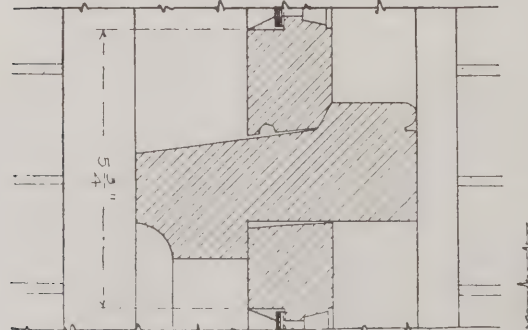
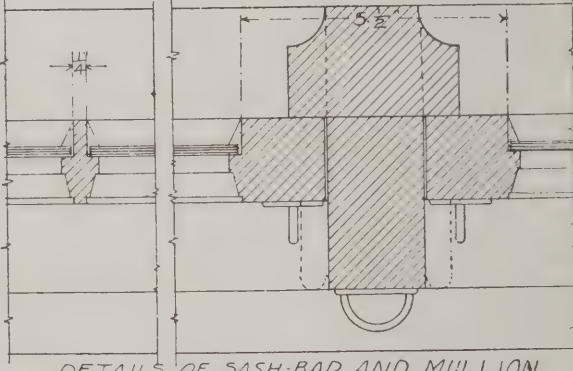
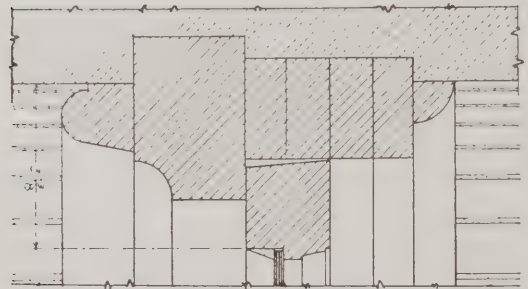
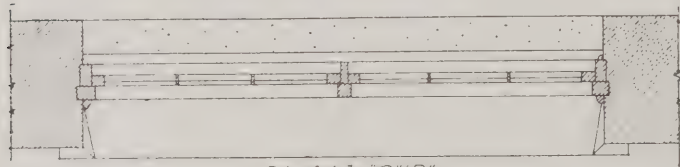
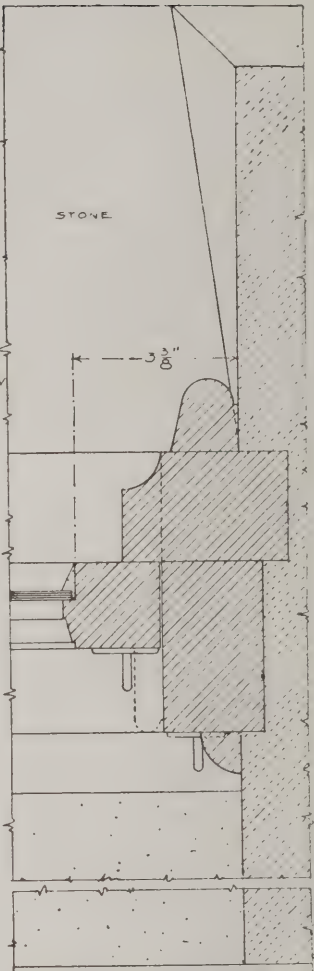
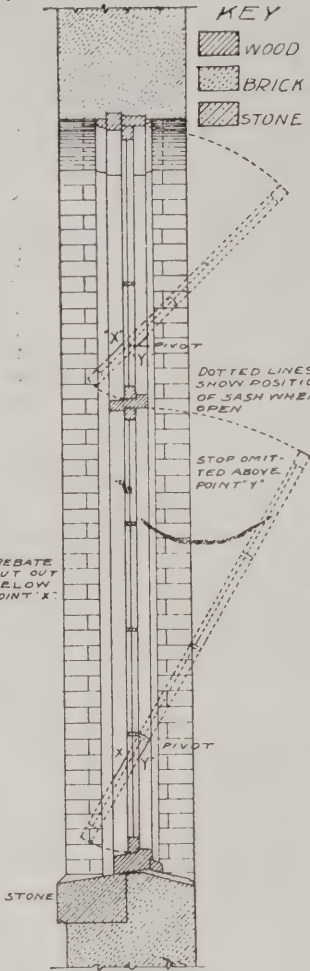
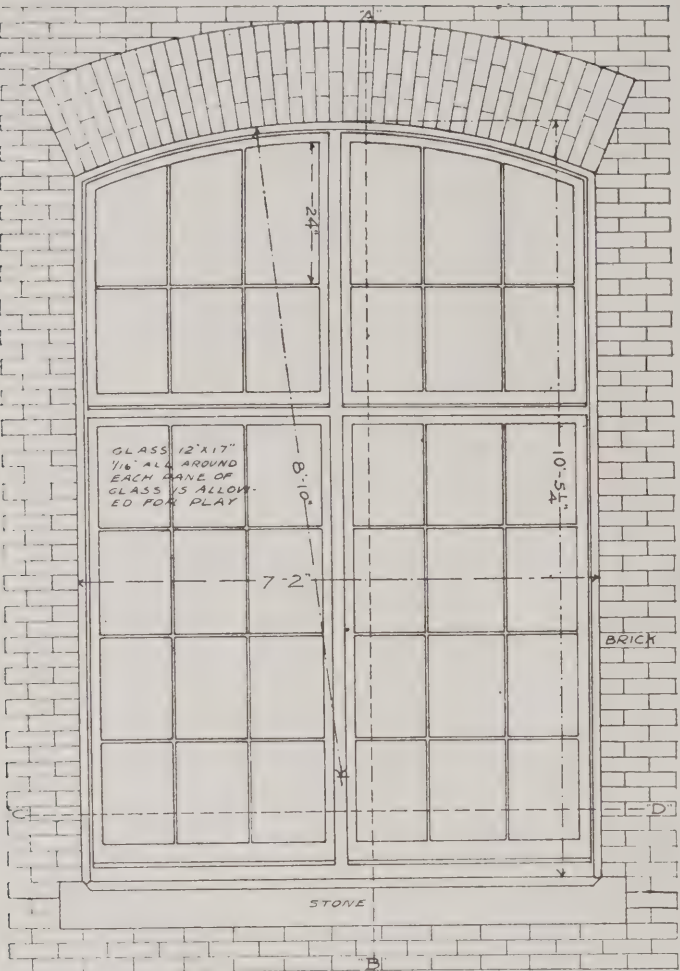
That the witnesses called by the Committee did not manifest greater interest in fireproofing methods than is shown in the report of their evidence is not surprising. Advice as to fire-prevention was not required from them. Consequently the only references they made to the subject were quite casual, vague, and meagre—as that "The corridor would be 10 ft. wide, and of fire-resisting construction," and "There would be no serious risk in case of fire in a small one-storey school so constructed [of timber], as every room could be emptied in a few seconds." Of reinforced concrete slab schools, one witness stated that "Such buildings were accepted by insurance offices as an even safer risk than brick buildings"; another expressed the opinion that in London the precautions against fire in schools had contributed to the increase in the cost of building—from which the inference is only too easy that cheaper schools may mean inadequate precautions against fire.

Some Special Materials.

Mr. W. N. Twelvetrees, in submitting a statement as to the suitability of reinforced concrete for school buildings, claimed that "it is one of the best fire-resisting materials known," and is less susceptible to heat than steel joists; while "for the purpose of staircases there was no saving in the use of reinforced concrete, but the material was better when exposed to fire: it did not



(See "Fire-resisting Doors and Windows for Factories," page 277.)



A STANDARD WAREHOUSE WINDOW.

(See "Fire-resisting Doors and Windows for Factories," page 277.)

splinter and crack like stone, it did not burn like wood, and it did not buckle like steel." It could be wished that there had been many more specific recommendations of special fireproofing materials; but, so far as we are able to see, the only materials of this class that are mentioned are "Expanded Metal," "Fram," "Frazzi," "Hyrib," "Uralite," and "some of the new types of asbestos slating." Too often witnesses had to confess that "they had no knowledge of modern methods and materials"; and the generally conservative character of school builders probably accounts for the shortness of the list of special materials. It could, of course, be greatly extended. There is, indeed, no lack of excellent materials, by the use of which school buildings of light and cheap type can be rendered reasonably immune from attack by fire. It was probably from a knowledge, and perhaps experience, of the extensive use of such materials in other directions, that the President of the Board of Education derived his idea of building cheaper schools. If that is so, there seems good ground for hope that special fireproofing materials will be generally adopted in the construction and protection of the new schools. It only remains for the manufacturers of such special materials to take occasion by the hand by freely bringing them into special prominence.

Picturesque Statistics.

In America they have an alluring way of putting their data picturesquely. Thus it is stated that the total cost of the fires in the United States in 1907 amounted to almost one-half the cost of the new buildings constructed in the country that year; and it is added that "the buildings consumed, if placed on lots of 65 ft. frontage, would line both sides of a street extending from New York to Chicago. A person journeying along this street of desolation would pass in every 1,000 ft. a ruin from which an injured person was taken. At every three-quarters of a mile in this journey he would encounter the charred remains of a human being who had been burned to death." Possibly such appeals may be useful in stimulating persons of sluggish imagination to a sense of the enormity of neglecting their plain duty with regard to the prevention of fires. More to the point from the practical point of view are the dicta on "improved building construction" put forward by Mr. Frank B. Gilbreth, who declares that the lessons from all fires point to these conclusions: No structure of the future should be built of wood. No structure of the future should contain any wood. It has taken, he says, costly lessons to teach us this; but if we have at last learned the lesson, the price we have paid is cheap. This faithful saying may be commended to the very special notice of the Departmental Committee on Cheap Schools.

An Ardent Advocate.

It may be objected, however, that Mr. Gilbreth is an out-and-out advocate of reinforced concrete construction, for which he claims that it affords least cause for fires, least amount of damage to structural parts either by fire or by water, least spread of fire above or around, and that it possesses a number of other virtues which, we fear, would be hotly contested by advocates of other systems. Even Professor Woolson, consulting engineer to the National Board of Fire Underwriters, who is not at all opposed to reinforced concrete construction, said, in discussing Mr. Gil-

breth's paper, that the all-concrete house could not be regarded as "practical from the artistic standpoint"—an unfortunate collocation of terms, which, nevertheless, leaves no doubt as to the meaning. He referred, in particular, to the difficulty of supplying in reinforced concrete the internal decorative features that are possible with woodwork.

The Artistic Interest.

Prof. Woolson measured the woodwork used in a sitting-room and dining-room of a friend's house, which is new and called "fireproof," and was astonished to find that those two rooms contained the equivalent of more than 1,700 sq. ft. of soft, highly inflammable wood. From these measurements it was estimated that the entire ten-storey building contained 16,000 ft. of "kiln-dried, painted and varnished kindling wood." Add the furniture and fittings, and you have the material for a very rapid and very big blaze, from which the inhabitants would be lucky to escape with their lives. No wonder that Prof. Woolson and others are advocating the enacting of laws which will prohibit the erection of such inflammable structures within congested areas. Mr. Gilbreth, replying on the subject of decoration, claimed that concrete decorations could be moulded "rapidly and surely," but did not venture to suggest in what way the undoubted prejudice against them could be removed. It would be an absurd mistake to imitate in concrete the decorative effects that are appropriate to wood-carving. The aim should be to evolve schemes and forms that are entirely suitable to concrete; and this is a subject that as yet has received insufficient study.

Fire-escape Staircases.

A somewhat unusual form of emergency fire-escape was recently under discussion by Richmond Town Council. It was proposed to fix, outside business premises, an iron stairway which would project about 2 ft. 3 ins. over the footway, at some 15 ft. above it. To reach the street level from the stairway, a rope ladder, to be kept always in readiness, would be dropped. The Highway Committee recommended the Council not to raise any objection to the projection of the iron stairway over the public footpath, and the Council consented to the arrangement. Apparently the circumstances are exceptional, as ordinarily it is not necessary for external fire-escape staircases to project over a public footway, but, generally speaking, the design of external fire-escape staircases has not received sufficient attention to redeem them from unsightliness. Surely there is no reason why, being, it is hoped, supremely useful, they should also be supremely hideous, as at least some of them are.

Soot as a Fire Risk.

A recent fire in a London residence was attributed by the firemen to electric-wire fusion, a strained elbow-joint having been found in the steel tubing under the library floor, where the fire had evidently burned fiercely. The joint, however, was probably not strained until the floor gave way during the fire. The builders engaged on the subsequent repairing work have formed a different opinion as to the origin of the outbreak. Removal of the burnt overmantel revealed the existence of several large pockets in which soot could easily accumulate. This would catch fire and smoulder until it reached the oak chimney piece. Several similar cases have come

under the notice of the present writer, who is therefore disposed to believe that, in most cases of fires in dwelling-houses, the flue is the point of origin. The flues may be either badly built or have unsuspectingly fallen into disrepair; or the stove-setter may have ignorantly or carelessly left cavities in which soot accumulates, smoulders, and menaces the safety of the house. A conscientious chimney-sweep will sometimes report the defect; which, however, more often remains undiscovered until, as in the case under notice, the effects of a conflagration reveal it. A lady who has suffered from this cause suggests that, in order to provide against this risk of fire, the prospective tenant should insist on the removal of massive overmantels and new grates, in order that it may be seen that they do not conceal defective work. It is an impossible proceeding; but the fire-brigade authorities, and the insurance corporations, might perhaps press for some efficient method of inspection of this prolific source of outbreaks in dwellings; and perhaps on the use of modern fire-preventing materials in the construction of flues and fireplaces.

FIRE-RESISTING DOORS AND WINDOWS FOR FACTORIES

Typical forms of door and window construction for warehouses, mills, or factories, are shown in the accompanying illustrations. With respect to the horizontally sliding fire-door, it may be mentioned that the approved method of fastening the door-stop to the wall is to run the bolts right through the wall, with a washer and nut at the end. Loosening of the stop by the frequent impact of the door is thus prevented, and the stop therefore retains its function of wedging the closed door tightly to prevent the spread of fire.

The window shown occupies a brick opening 7 ft. 2 ins. by 10 ft. 4½ ins. For a window of the same design for a 6 ft. 2 in. opening, the radius of the arch should be 7 ft. 8 ins., the glass occupying 10 ins. by 17 ins. The necessary details are shown in the illustrations, p. 275, 276.

COMPANY REPORTS.

The 23rd ordinary general meeting of the Patent Victoria Stone Co., Ltd., was held in London on March 4th. The chairman, Mr. W. T. Douglass, M.Inst.C.E., reviewing the business of the company during the past year, said he was glad to be able to report considerable progress, the profit having been £6,168, as against £3,720 for the preceding year. A final dividend of 3½ per cent., making 5½ per cent. for the year, was recommended, and subsequently adopted by the meeting.

The report of Messrs. Stanley Brothers, Ltd., of Nuneaton, brick and tile manufacturers, states, though there was no improvement in the building trades last year, prices remaining at the former low and unprofitable level, the company did very much better than in the previous twelve months, owing to the improved return from its collieries. The trading profit amounted to £25,900, as against £12,900, and although the allowance for depreciation is raised from £12,600 to £15,700, the surplus available is sufficient to cover the debenture interest and leave a balance of £5,600 to be carried forward.

STEEL OFFICE FITTINGS.

On many occasions we have insisted that the grave risks incurred by filling business buildings with woodwork fittings are entirely unnecessary. The modern architect fully realises this danger, but until quite recently he was somewhat at a loss for substitutes for the "kindling wood" which he was compelled, either by the parsimony of his clients or by the deficiency of resources, to adopt, often very regretfully and unwillingly. The latter of these difficulties has been overcome. The architect is no longer under the necessity of specifying woodwork fittings for lack of materials that are much more fire-resisting; nor is his choice confined to the old-fashioned deed-box stamp of article. The deed-box, by the way, may be taken as a somewhat early recognition, by the acute legal mind, of the principle that is only just now beginning to dawn on business men in other directions—that of storing important documents (or, for that matter, any other kind of inflammable goods)—in receptacles that will not easily take fire. The old style of deed-box, however, although it represents a step in the right direction, falls very far short of the high degree of efficiency that has been now attained. For instance, the boxes usually stood on wooden shelves. Within recent years considerable attention has been given to the production of fire-resisting fittings for banks, libraries, and business offices. Several such systems have been described and illustrated in this journal, and we now illustrate the steel-fittings system that has been elaborated, appropriately enough, by Milner's Safe

Co., Ltd., 28, Finsbury Pavement. It is also in accordance with the fitness of things that this system is being widely adopted in insurance offices, as well as in banks, and—where, from the point of view of fire risk, it is even more urgently required—in large drapery and other establishments, for the storage of highly inflammable goods. From the illustrations it is apparent that these fittings are extremely neat, clean, and businesslike. As compared with woodwork fittings, they effect considerable economy in space that, in a place of business, is very valuable, not to say precious, in all three dimensions. The material being, of course, non-absorbent as well as non-inflammable, admits of cleanliness being more easily maintained, and in greater degree than is possible with woodwork; and the advantages of steelwork fittings are altogether so obvious that they are certain to be adopted where business organisation and fire prevention are accredited with their true value and importance.

All kinds of office fittings and furniture are now manufactured in steel by the Milner Safe Co.; cabinets for all purposes, and even office desks and tables being easily adapted to construction in this fire-resisting manner. Pressed sheet steel, 1-16th of an inch thick, is the material employed, either riveted or screwed in an angle-iron frame. The cabinets for garments, examples of which are illustrated, being composed of separate members, ensure the restriction of a fire, should it occur, to a small space, which could easily and rapidly be dealt with. Each cabinet has a series of small ventilation holes in the bottom.

SOCIETIES' MEETINGS.

LIVERPOOL ARCHITECTURAL
SOCIETY.

*Mr. Ernest Newton on Domestic
Architecture.*

"Domestic Architecture" was the subject of an interesting paper read by Mr. Ernest Newton, A.R.A., F.R.I.B.A., at last week's meeting of the Liverpool Architectural Society. Mr. Arnold Thornely presided.

The lecturer said that the past thirty or forty years had seen an extraordinary activity in domestic architecture, more especially in England, but it was impossible, at present, to reduce this manifestation of development to any sort of order, or to be sure where it was leading us. Personal predilection was their only guide. One man was attracted by the stately ordered architecture of the seventeenth and eighteenth centuries; others sought their inspiration from earlier times; some went in for form, others for colour and texture and the skilful or playful manipulation of materials. Again, they had men whose dogma was "straightforward, commonsense building"; and others who threw off the shackles both of old work and commonsense, and deliberately used forms of no known, or even guessed at, parentage. He would be a rash man who would pass judgment on any of these schools. It was all very bewildering; but the lecturer thought there was one clear thread amidst the tangle, and that was—they were all very much in earnest. Everyone was making his contribution in his own way, and so



STEEL LOCKERS, UNION BANK OF SCOTLAND, CORNHILL, LONDON.

long as their work was really their best, and done with real conviction, they could leave the future to straighten out the tangle. It had been remarked more than once that the French system of training architects might be good for the production of monumental architecture, but that the French people could not build country houses. He believed the French could do what they liked, but the set in France was more towards town architecture, and their domestic work in towns was proof enough that their training was as efficient for domestic as for monumental work.

Mr. Newton was warmly thanked for his lecture, on the motion of Mr. Edmund Kirby, seconded by Mr. W. E. Willink, and supported by Mr. T. E. Eccles

R.I.B.A.

Cost of Alterations to Premises: New Fellows.

At the business meeting of the Royal Institute of British Architects held on February 27th, the president (Mr. Leonard Stokes) said that the cost of acquiring, altering, and refitting the Institute premises in Conduit Street, and buying the Architectural Union Company's shares, had amounted in round figures to £30,800. The sale of the Institute investments had realised £21,143, and an overdraft of £7,000 at the bank was desired in consequence. In reply to a question by Mr. Woodward, the president detailed the expenditure as follows:—(1) £10,000 for Messrs. Knight, Frank and Rutley's interest in the premises; (2) £13,000 for buying up the Architectural Union Company's shares; (3) £7,500 for alterations.

At the same meeting Messrs. H. E. Budden (Sydney), A. E. Corbett (Manchester), A. E. Hughes (London), and Reginald G. Kirkby (Huddersfield) were elected Fellows; Messrs. B. C. E. Bayley and J. H. Gray Associates; and Sir Richard Paget an Hon. Associate.

EDINBURGH ARCHITECTURAL ASSOCIATION.

Scotland and the Town Planning Act.

At the meeting of the Edinburgh Architectural Association held on March 1st, Mr. J. A. Williamson, A.R.I.B.A., read a paper entitled, "Notes on the Recent International Town Planning Conference."

London, said Mr. Williamson, had been referred to by Mr. W. E. Riley as furnishing an impressive summary of the evils resulting from an incapacity to appreciate future growth and development in a city. The London County Council, up to December, 1909, had carried out 133 improvements at a cost of 8½ millions sterling. It agreed to contribute £1,455,120 towards the cost of 486 local improvements. The Council's predecessors, between 1855 and 1889, expended more than 11 millions sterling in constructing new and widening old thoroughfares. Notwithstanding these enormous sums, no satisfactory and commensurate results were possible. It was estimated that in 1931 the population of Greater London would almost reach the colossal figure of eleven millions. The Town Planning Act would therefore have accomplished some good if it only forced on the public notice the urgency for development to proceed on rational lines, with due foresight and provision for the inevitable necessities of the future. Two extremes were mentioned which the town development should take. These should be either solid continuous rings, or the growth of numerous detached townlets, spreading from a centre, such as the existing villages

on the outskirts of the town. Developing the city on the principle of grouping the buildings in certain parts, and leaving adequate open spaces around each group, was recommended as the right course. The lecturer contended that the new Act was unfortunately too English in intent and application. Custom had decreed a place for tenements in the economy of Scottish towns, and it was important that the question of their continuance should be debated and determined as a preliminary to any town planning scheme, as not only was the general lay-out of internal areas affected, but the widths also of main and subsidiary roads. Edinburgh, containing nearly 12,000 acres, was said to have 50 per cent. of its area in open spaces and public parks, with an average density of 31 persons to the acre. In this respect Edinburgh might be regarded as approaching the ideal of a garden city were it not for isolated cases, where the actual density ran up to 500 and 600 per acre. The lecturer concluded by emphasising the need for shrewd anticipation of development in the immediate preparation of a town plan.

The members of the Edinburgh Architectural Association paid a visit recently to the General Post Office, Edinburgh, which has been extended. The party were conducted over the building by Mr. A. R. Myres, principal assistant architect, H.M. Office of Works. The extension, which has been carried out under the direction of Mr. W. T. Oldrieve, principal architect, H.M. Office of Works, and will, with furnishing, etc., cost about £65,000.

consists of a seven-storey block erected at the east wing, next Low Calton, and the heightening of the main building. In the new building at Low Calton the basement and first floors will be used as stores for the telegraph engineers, while the upper floors will be occupied as offices for the use of the superintending engineer and staff, parcel and letter sorting-rooms, and retiring-rooms, etc., for the sorters and postmen. The parcel work will be carried on in this building, and as ample accommodation is provided, it will be unnecessary at the Christmas season to utilise the building at Roseburn, which for some years has been made use of to relieve the pressure. In the addition to the main building a large new staff dining-room and kitchen and offices for the accountant and secretary will be provided.

Subsequently a visit was paid to the Edinburgh College of Art, Mr. F. Morley Fletcher, the director, conducting the party over the building. The elementary modelling house, painters' and decorators' section of workshops, and the rooms for modelling, carving, architectural design, and painting from life were visited.

SOCIETY OF ENGINEERS.

Petrol Air-Gas as an Illuminant.

Mr. E. Scott-Snell read, on Monday, March 6th, before the Society of Engineers, a paper on "Petrol Air-gas." Some general remarks on the subject of the paper were followed by a discussion of the most suitable proportions of air and



FIRE-RESISTING STEEL DRAWERS.



FIRE-RESISTING STEEL FITTINGS IN AN INSURANCE OFFICE.

petrol and the constitution of petrols used for lighting purposes. Reference was made to experiments indicating the appropriate mixture necessary for obtaining complete combustion and the limit of combustibility. The laws of evaporation were stated in their relation to the subject, a number of formulæ being given and illustrated by vapour-pressure curves. The author then dealt with the stability of mixtures and the possibility of condensation, and showed that a rich mixture, if not too rich, is free from danger of explosion, giving an experimental proof. The advantages of a self-burning mixture were pointed out. The author showed that a comparison with other illuminants based on "price per cubic feet" must be entirely misleading, a comparison with coal-gas and acetylene being made on the basis of candles per cubic foot of gas. Various types of machines for generating petrol air-gas were described, and reference was made to some difficulties of design. In conclusion, it was pointed out that there was no more satisfactory illuminant than petrol air-gas, but that care should be exercised to select a well-designed plant, which would not need constant attention and readjustment.

JUNIOR INSTITUTION OF ENGINEERS

Mr. S. Bylander on the Royal Automobile Club Building.

At the last meeting of this Institution, held at the Royal United Service Institution, Whitehall, it was announced that the vacancies caused by the death of Mr. Nisbet had been filled by the appointment of Mr. B. E. Dunbar Kilburn as chairman, Mr. Percy L. Young as vice-chair-

man, and Mr. Reginald Krall as member of Council.

The meeting was a combined meeting with the Architectural Association, to assist in the discussion of a paper on the architectural and engineering features of the Royal Automobile Club Building, which was read by Mr. S. Bylander, the engineer (vice-chairman of the Institution).

In the first part of the paper the author dealt with the points of architectural interest in connection with the façade, east and west entrances, and the interior of the building, including entrance hall, elliptical vestibule, east and west corridors, main staircase, etc., passing on to the features appertaining to the first and second floors, and the basement floor, including swimming bath, Turkish bath, etc.

In describing the engineering features of the building, the author pointed out that skeleton framing or cage construction had been adopted as far as was consistent with economy. Preliminary drawings and calculations were made to ascertain the cheapest and best type of construction, consistent with the architectural requirements. Two sets of calculations were made for the steelwork, one approximate, in connection with the skeleton plans, and the other accurate and final for the working drawings. An elaborate system of marking the different steel pieces was adopted for the purpose of speed and accurate erection.

The paper was very fully illustrated by an appendix of twenty-four plates, some of them reductions of the working drawings. The architects for the building are Messrs. Mewès and Davis and Mr. E. Keynes Purchase, referring to whose work the author said that architecturally the club must take an important position among the many fine buildings in Pall Mall.

An interesting discussion followed, in which the Chairman, Mr. Gerald C. Horsley, Vice-President of the Architectural Association, and Messrs. J. H. Pearson, C. G. Gage, P. L. Young, A. G. Young, R. Marshall, W. A. Tookey, and E. J. Daniell took part.

MANCHESTER SOCIETY OF ARCHITECTS.

The Architect's Use of a Library.

At the meeting of the Manchester Society of Architects held on Wednesday last, Mr. J. H. Sellars read a paper on "The Architect's use of a Library." To some people, said Mr. Sellars, a library was dull and uninspiring; to architects it could be a great inspiration and help. There was no better relaxation than to turn from the drawing-board to one's books, which would point out the true, if narrow, path.

It was doubtful whether the old architects understood the history of art as we did to-day. If Wren could have studied the folios of Greek work, we might have seen St. Stephen's, Walbrook, with the mouldings as refined and the ornament as delicate as Greek work. Knowledge of history impressed upon us the fact that great styles were based on reason and logical construction, and that buildings to be considered great must fulfil their purpose. To gain a comprehensive knowledge of the history of architecture it was necessary to be familiar with the history of the people, their religion, and their commerce. Wide reading would bring us to this knowledge, and would aid us in the formation of an artistic character and a power of æsthetic reasoning. Architects should strive after culture in its true

NEWS ITEMS.

Enlargement of Fleet Street Post Office.

It has been decided to rebuild and enlarge the sub-post-office in Fleet Street, opposite Fetter Lane.

* * *

The Mall Archway.

Arrangements are to be made to erect a brick casing wall at the Charing Cross entrance to the Mall when the buildings in Spring Gardens and Charing Cross are demolished.

* * *

A Mission Church.

For the City of London School Mission a church is proposed to be built from designs by Mr. H. P. Burke Downing, F.R.I.B.A., at a cost of about £9,000. Accommodation for 832 worshippers will be provided.

* * *

New Lifeboat House for Peterhead.

At Peterhead a new house for a motor lifeboat is to be built, at a cost of £2,600. The architect is Mr. W. T. Douglas, of Westminster, and the contractors are Messrs. Scott, Marshall and Co., of Edinburgh.

* * *

Doubts About Canonbury Tower.

No tablet is to be placed on Canonbury Tower to commemorate the reputed residence there of Oliver Goldsmith, for the reason that the Local Government Committee doubts the authenticity of the statements of local historians as to such residence.

* * *

Contract for Selby Abbey Reconstruction.

The tender of Messrs. Bowman and Sons, of Stamford, amounting to £8,000, has been accepted for the work in connection with the rebuilding of the south transept of Selby Abbey. Messrs. J. D. Oldrid Scott and Son are the architects.

* * *

Southend Workhouse Extension.

Plans are to be prepared for a new block of forty-eight beds at the workhouse at Southend, half to be built at once, and the rest when occasion demands. The guardians are also to proceed with the building of a new quarter for the nurses. The cost of the proposed scheme is estimated at £10,000.

* * *

Change of Partnership.

Messrs. Rickman and Burr, surveyors, 5, Queen Street, Bloomsbury, W.C., announce that Mr. Rickman has decided to retire from practice, without severing the friendship which has continued during their business connection of the last forty years. The firm will continue to carry on business under the style of E. J. Burr and Son at the above address.

* * *

Proposed Restoration of Linlithgow Palace.

At the recent annual general meeting of the Glasgow Institute of Architects (Mr. John B. Wilson, F.R.I.B.A., presiding), the proposed Scottish National Memorial to King Edward was considered, and a unanimous opinion was given in favour of the restoration of Linlithgow Palace, in preference to any other of the proposed schemes.

* * *

Liverpool Street Arcade.

Liverpool Street is to have an arcade. In connection with the reconstruction of Liverpool Street Underground Station, formerly known as Bishopsgate Street

Station, the old arched roof is being replaced by a steel and concrete floor at a lower level, on which a one-storeyed building, comprising some twenty-five shops in the form of an arcade, from Liverpool Street to Broad Street, together with tea-rooms will be erected. To provide entrances to the arcade, some shops will be demolished in Liverpool Street and Broad Street.

* * *

L.C.C. Central School of Arts and Crafts: Appointment of New Principal.

Saturday last was the latest date for receiving applications for the post of Principal of the London County Council Central School of Arts and Crafts, Southampton Row, rendered vacant by the retirement of Professor Lethaby. The position carries a salary of £1,000 a year.

* * *

Three Lectures by the New Slade Professor.

Among the lectures to be given at the Royal Institution after Easter are three by Professor Selwyn Image on (1) John Ruskin, or The Seer and Art; (2) William Morris, or The Craftsman and Art; and (3) Walter Pater, or The Connoisseur and Art. On April 28th Professor Flinders Petrie will read a paper on "The Revolution of Civilisation."

* * *

Swedish Decoration for an Architect.

Mr. H. H. Wigglesworth, F.R.I.B.A., has had conferred upon him the distinction of Knighthood of the First Class of the Royal Order of Wasa. The investment took place recently at the hands of the Swedish Minister in London on the occasion of the consecration of the Swedish Church, Harcourt Street, Marylebone, of which Mr. Wigglesworth (Messrs. Niven and Wigglesworth) is the architect.

* * *

New Buildings for Kingsway.

It is stated that the Government intend to follow the erection of the new building for the Public Trustee's Department in Kingsway by providing accommodation on a site immediately adjoining for the Lunacy Commissioners, who have for long past been inadequately housed in hired offices in Victoria Street. Both buildings will have imposing frontages, and will cover an area of 13,335 ft. super. The Commissioners of Works are to pay for the sites a perpetual rent charge of £3,200 a year.

* * *

A Shock to Aesthetic Paris.

The public mind, or, rather, that portion which concerns itself with the beauty of Paris, is very greatly exercised at present with certain additions which are being made, and others which are threatened, to the justly admired façades in the Rue de Castiglione and the Rue de Rivoli. These streets — planned under the first Napoleon, and carried out on his architects' plans between 1807 and 1835 — preserve an absolute regularity in their arcades, balconies, storeys, architecture, and even in their system of lighting, all of which are preserved by legal decrees. By some oversight, however, these decrees did not extend specifically to the roofs, which, hidden behind a parapet, were considered to be tacitly included. But the needs of certain hotel-keepers who require further bedroom accommodation has caused them to add two or more storeys, and these so disfigure the skyline, and are so likely to be followed by others that æsthetic Parisians are up in arms, and the matter will be brought before the courts, and ultimately before the Legislature.

sense; not artificial or superficial accomplishment, but the natural and inevitable process by which a man came into possession of his own nature, and into a real and fruitful relation with the world about him; not the possession of information, but the absorption of knowledge such as would enable them to reject the untruthful and to pass by the trimmings of styles that are dead. Too many books had been written on taste, "What is Art," and so forth. They were unprofitable and wearisome, and often the work of amateurs who did not practise and were unable to put themselves into the position of the worker, and who read into buildings motives and causes which seldom had any existence.

[GLASGOW TECHNICAL COLLEGE.

French Masonry.

At a meeting of the Glasgow Technical College Architectural Craftsmen's Society, held in the College on March 3rd, Mr. Bowman, president, in the chair, Mr. James S. Boyd, Licentiate R.I.B.A., read a paper entitled "A Study of French Architectural Masonry." At the outset, the lecturer, in explaining why he advocated the study of French masonry, pointed out that the examples of scientific masonry were so numerous in Paris and its vicinity as to encourage anyone to make a comprehensive study. The organisation of the workmen in a first-class mason's yard in Paris was described and compared with similar yards in this country. Over 100 photographic and telephotographic slides showing the construction of domes, vaults, bridges, etc., in Paris, Versailles, and Rouen were exhibited. The speaker stated that boldness in French masonry construction was traditional, just as caution or lack of boldness was traditional in British work. In concluding, the opinion was expressed that architects in this country should be trained to master thoroughly the practical applications of geometry to building work, so that they — as master-craftsmen — may assist the actual workman in the solving of any difficult constructive problem that may occur in the carrying out of the design of the master-mind.

LEICESTER SOCIETY OF ARCHITECTS

The Influence of Tradition and Fashion on Modern Architecture.

At last week's meeting of the Leicester Society of Architects, Mr. Edward Turner gave an address on "The Influence of Tradition and Fashion on Modern Architecture." He said that a great many architects were far more apt to be influenced by both tradition and fashion than to turn out anything that might be called really original. He maintained, however, that this was no detriment, for the study of the architecture of the past was a necessity for modern architects, and was helpful to them. He instanced St. George's Hall, Liverpool, and Westminster Cathedral as two of the finest buildings in the country in which the study of architecture of the past had helped the architect. The only danger lay in copying. What they needed was so to study tradition that they became imbued with its spirit. With regard to fashion, the speaker said people had always been followers of fashion in every age, and the speculative builder took great care to provide houses exactly alike, so that Mrs. "So-and-So" could have the same as her neighbour. Examples of the "beauty" of such a scheme were to be seen in all modern suburbs.

REORGANISATION OF THE L.C.C. ARCHITECT'S DEPARTMENT.

The London County Council decided that, as from January 1st, 1910, the educational architectural work should be placed under the charge of the architect, and that the staff of the Department of the Architect (Education) should be transferred to the Architect's Department. The Establishment Committee has now considered and reported upon proposals for the reorganisation of the amalgamated departments on a permanent basis. The Establishment Committee say that they are satisfied that the complete fusion of the departments is in the best interests of the Council, and that, with further modifications, which time and experience may suggest, the new arrangement will result in an organisation combining efficiency with economy. The main feature of the organisation of the combined departments is the division into three separate branches as follows—(1) administrative division; (2) constructional division, other than schools; and (3) schools division. The necessary reorganisation, though affecting the department as a whole in a considerable degree, necessarily has its greatest effect in connection with the last-named division. When the departments were fused there was a considerable quantity of arrears of educational work, but by unity of administration and correlation of similar work these arrears have been to a large extent overtaken.

There is, however, the Establishment Committee point out, a large amount of current work which constantly tends to increase, and they are satisfied that it is necessary for the fixed staff of the department to be increased in numbers and strengthened in status in order to secure an efficient organisation, not only to deal with a further acceleration of work, but to secure the maintenance of that acceleration in an increased programme.

It is pointed out that in the Architect's Department there is a large and varying number of technical officers who form what is called the unestablished staff. For some time it has been recognised that it is desirable to place on the permanent staff a certain proportion of the unestablished staff, and this Committee are advised that the incorporation of the staff of the Architect's (Education) with the Architect's Department makes it imperative that action in this direction should not be delayed any longer. Out of a total staff of 183 assistants (excluding clerks of works and messengers) engaged on schools work, there are only 61 assistants on the established staff; and taking the whole of the department (excluding clerks of works and messengers) there are 204 established and 281 unestablished assistants. This proportion of unestablished staff is unnecessarily large, and the permanent requirements of the department call for a higher proportion of permanent officers. It was therefore suggested that fifteen unestablished assistants—none of whom had had less than seven years' service, and seven of whom had been employed for more than fifteen years—should be placed on the established staff at salaries approximating to their weekly pay. All these assistants are capable and fully qualified technical men.

It was also proposed that the thirteen positions on the established staff of district clerk of works should be abolished as vacancies occur, and that the work which such clerks of works are called upon to

perform should in future be undertaken by technical officers of first-class rank. Having regard to the nature of the duties entrusted to these officers, which are largely administrative, as opposed to the duties usually performed by clerks of works, the Committee think that the adoption of this course will be in the interests of efficiency. The proposed reorganisation is thus tabulated:—

Proposed positions.	Proposed Salaries.	
	On 1st April, 1911.	Ultimate.
	£ s.	£ s.
1 Chief assistant architect...	900 0	1,000 0
1 Divisional architect for schools ...	800 0	800 0
1 Assistant divisional architect for schools ...	575 0	600 0
7 Assistant architects ...	3,875 0	3,900 0
2 Measuring surveyors ...	1,200 0	1,200 0
9 Principal assistants ...	3,975 0	4,150 0
20 Senior assistants ...	7,000 0	7,400 0
73 1st class assistants ...	18,030 0	21,900 0
69 2nd class assistants ...	11,357 10	13,800 0
9 Minor establishment assistants, class I. ...	1,033 10	1,404 0
21 Minor establishment assistants, class II. ...	1,826 10	2,184 0
6 Non-classified assistants...	1,540 0	1,540 0
12 Clerks of works ...	2,950 0	2,950 0
1 Assistant clerk of works...	150 0	150 0
2 Boiler inspectors ...	300 0	300 0
2 Clerks of works on weekly wages ...	399 2	399 2
1 Jobbing Carpenter on weekly wages ...	109 4	109 4
2 Messengers, class I. ...	208 0	208 0
1 Messenger, class II. ...	78 0	91 0
2 Messenger, class III. ...	127 8	156 0
242	56,434 4	64,241 0

The net result of the staff rearrangements is to add a divisional architect, one assistant divisional architect, one principal assistant, five senior assistants, eight assistants in the first class, four assistants in the second class, and on the other hand to reduce the establishment by one assistant architect, one clerk of works, two non-classified assistants, and one minor establishment assistant.

Mr. J. Briggs, the chief assistant architect, acts for the architect with full responsibility, whenever necessity requires, in supervising both the administrative and constructional work of the department. Owing to the fusion of the departments, additional responsibilities have devolved on Mr. Briggs, and the Committee think that a salary of £1,000 a year is not inappropriate for the second-in-charge of a department of the size and importance of the Architect's Department. This salary for the deputy of a head of a department obtains in several of the large departments in the Council's service, and the architect has spoken in the highest terms of the value of Mr. Briggs's services to the Council. The Committee recommend (1) That the salary (£800) of Mr. J. Briggs, chief assistant architect, be increased to £850 a year as from 1st April, 1910, rising by annual increments of £50 to £1,000 a year.

It was recommended that Mr. R. Robertson, assistant architect, be promoted to be divisional architect for schools, and that his salary (£600) be increased to £800 a year as from April 1st, 1910. It was also suggested that Mr. H. R. Perry, assistant architect (schools) should be styled "assistant divisional architect for schools," at a salary of £550 a year, rising to £600 a year. Further recommendations were the promotion of Mr. W. Hynam (£450), principal assistant, to be assistant architect at a commencing salary of £475 a year, rising a year later to £500; the promotion of Mr. F. H. Peacock and Mr. F. W. Harrison, senior assistants, at £400 a year each, to principal assistants at £400 rising by £25 a year to £450; and a number of minor promotions were recommended.

ENQUIRIES ANSWERED.

Fair Wear and Tear Covenant.

A. G. C. (DEVONSHIRE) writes: "Under a fair wear and tear covenant, is an outgoing tenant liable for ceilings darkened by lamps or gas brackets?"

—This question hardly comes within our scope, but we should have but little hesitation in answering it offhand in the affirmative, a "fair-wear-and-tear" covenant being, as a rule, construed somewhat stringently as against the tenant.

Wanted, a Heat-proof Floor.

THERMOS (LANCS.) is building a two-storey building. The ground floor is to be a bakery, and the first floor is to be used as a public hall. Suggestions (especially from experience) would be appreciated as to the nature, construction, and cost of the floor of the hall to prevent the heat getting through.

Red Spots on Paint.

A (N.W.) writes: "On the front of an old brick building in a sheltered position I have formed panels of Keene's cement and sand and finished with neat Keene's. I have given five coats of paint (white to cream), followed by two of varnish. The first coat of paint was put on two days after the panels were finished, and the second coat of varnish one month after the first coat. Six months later red spots began to appear, and now, ten months from the time of painting, the whole of one panel, 6 ft. by 3 ft., and 1½ in. thick, is covered with red spots about the size of a shilling, and the other panels are following suit. Will you kindly tell me the cause and remedy?"

—Everything appears to point to some vegetable growth which was not removed before the cement was applied, and it would work through the coats of paint in course of time. We suggest that you scrape off a little of the red spots; and place the paint in a bottle of ammoniated alcohol. If the red is of vegetable origin it will decompose; if you add acetic acid the colour will come back. If, however, the red spots should be rust, which we very much doubt, the ammonia will not affect it. You might try touching up the spots with weak ammoniated alcohol, which may have the desired effect, washing off with clean cold water.

A.S.J.

Architect and a Building Contract.

A correspondent writes:—"Upon completion of a certain contract where some extras were involved I rendered a complete account to the architect, but in response the latter has issued a final certificate stating in his opinion the amount due, which sum is far and unreasonably below my claim. I have requested from him a statement in explanation of his certificate showing how he arrives at his decision, but he has refused to grant any such particulars or explanation."

Our correspondent wishes to know whether he has any legal remedy and what steps he ought to take to secure just treatment.

—In response to our request for a copy of the contract, he says the architect is the only person who possesses a copy, and wishes to know whether a copy of the agreement can be demanded from the architect, and whether the builder has legally the right to hold a copy of the agreement as well as the architect.

Our correspondent is recommended to employ a solicitor, who should have his attention called to the case of *R. W. Blackwell and Co. v. the Corporation of*

Derby (in the Court of Appeal) where the contract contained a clause giving the borough engineer every conceivable power and making any award by him final and binding on both parties. In the course of giving judgment Lord Justice Fletcher Moulton expressed the view that any case of this kind must be decided on the facts, and that, where the nature of the dispute arising from the facts which were subsequent to the contract was such that the tribunal (set up by the contract, in this case the borough engineer) was not likely to be able to deal impartially with the dispute, it was open to the Court, and would usually be its duty, to refuse to enforce the arbitration clause. Lord Justice Buckley concurred, and remarked that the matter to be determined was whether the contractual referee was an unreasonable person. The worst possible referee on the question of unreasonable conduct was the person who was accused of being unreasonable. It was not human nature to suppose that he could properly determine whether he himself was an unreasonable person.

Probably a letter from the solicitor informing the architect of the untenable position he has assumed would result in a change of attitude; if it did not, legal proceedings will have to be taken. As regards a copy of the contract, it can hardly be refused, but the builder might be required to pay for the making of it.

It is in matters like this that the advantage of having a printed form of contract such as that issued by the R.I.B.A. at a cost of 1s. becomes apparent, as it is easy to have it signed in counterpart when the contract is signed; and in any case its provisions are perfectly familiar. Attention may also be drawn to the well-known case of *Robins v. Goddard*, where the effect of the decision is that where an arbitration clause exists there is no finality about an architect's certificate even though it purports to be a final one.

Our correspondent should not have any great difficulty in securing a reference to this dispute to an independent arbitrator, but he would probably have succeeded in obtaining redress at the outset if he had been a member of an organised body such as the National Federation of Building Trades Employers.

THE TIMBER OF BRITISH COLUMBIA.

The merchantable woods of British Columbia are Douglas fir, white or silver fir, hemlock or Alaska pine, larch, red cedar, yellow cedar or cypress, Engelmann spruce, Menzies spruce or Sitka spruce, and white pine. A useful description of these timbers is given in "The Timber of British Columbia (Bulletin No. III.), compiled by Mr. C. F. Pretty for "Pretty's Timber Exchange," Vancouver (London agents, British Canadian Securities, Ltd., Pinner's Hall, E.C.).

Douglas Fir.

Fir is the most plentiful wood in the south-western part of the Province of Vancouver. Douglas or yellow fir grows to a great size and height. The tallest Douglas fir of the coast of which there is record was 380 ft., which is also the maximum height recorded for redwood. Trees 15 ft. in diameter have been observed, and some of the largest Douglas firs of the coast forests have scaled as much as 60,000 board feet. Whole forests are found in which the trees average 250 ft. in height and 5 ft. in diameter. Such trees are usually clear for a long way up the stem, since their rapid growth in competition for

light does not permit the formation of large branches, and such small ones as are formed soon die under the shade of the crowns and are broken off; but the average and most cheaply logged areas are those that are covered by timber which runs from three to five feet on the stump and from 75 ft. to 150 ft. to first limb. These trees, if they hold their size evenly, cut enormous quantities of lumber, and many have been seen that would cut 25,000 ft. of merchantable timber. Fir has great strength, and is especially valuable for structural purposes. It is used largely in shipbuilding, bridge work, wharves and railway cars. It finishes and stains well, and has a grain almost equal to oak.

White or Silver Fir.

This wood is much coarser in grain than the Douglas fir, and is not suitable for outside work, but is used for ship-lap, lumber or any inside work where it is not subject to the weather. Although there are some large tracts of silver fir, it is not a very widely distributed wood in British Columbia. The trees, when found, however, are usually tall and clean, and average about three feet on the stump.

Hemlock or Alaska Pine.

This tree grows through the whole Province, usually mixed with other timber. It differs greatly from the Eastern hemlock of the Rockies, growing tall and clear of limbs, and averages about two and a half feet on the stump, although it is possible to find many much larger specimens. The grain is much more compact than the Eastern hemlock, and is very sound, having no shakes as the Eastern hemlock has, and it withstands the elements much better. In dry climates it will outlast many other woods at present in use. In appearance it stands between spruce and yellow pine, and often experts are deceived. It takes a fine, hard finish when dry.

Larch.

This tree, which is very plentiful in the higher altitudes and northern parts of British Columbia, resembles the Eastern balsam, but grows much larger and taller, averaging about two and a half feet on the stump. It resembles British Columbia hemlock in grain, is tough and durable, and can be used for structural purposes, in fact is suitable for almost any kind of building. It stains well, and takes a beautiful finish.

Giant Arbor Vitæ, Red Cedar.

The giant arbor vitæ is next to the Douglas fir in importance in British Columbia, where it attains its greatest size on Vancouver Island, along the coast and along the lower parts of the rivers of the Coast Range. It is rarely found in the dry interior of British Columbia, but it is abundant in the river valleys on the slopes of the Selkirk and Coast ranges. Though seldom found more than 150 ft. in height, in circumference it rivals the Douglas fir, trees of from 8 to 10 ft. in diameter not being rare, and they are occasionally found much larger. It is chiefly used for the manufacture of shingles, for which purpose it is unequalled by any other wood. Formerly the shingles were made by hand, the wood splitting easily, but improved machinery has so lowered the cost of production that comparatively few hand-made shingles are now used, though they are still in demand when a shingle of superior quality is desired. The wood of this tree takes a very brilliant polish, and is well adapted for interior finishing of all kinds. So great is the variety of shading in the colour of the wood that a large house may be finished in it without two rooms being alike. In British Columbia it enters largely

into the manufacture of doors and cabinet work of all kinds. Like all cedars, it lasts well underground, and on this account it is much used in the form of telegraph poles and fence posts.

Yellow Cedar, Yellow Cypress.

The yellow cypress is not nearly so abundant in British Columbia as the arbor vitæ, nor is its circumference so great. Its height is about the same as the arbor vitæ—150 ft.—and its average diameter is about four feet, though occasional trees attain five feet. The yellow cypress is confined to southern parts of British Columbia; it is not found at sea level, the finest trees growing at an altitude of from 1,000 to 2,500 ft. Though valuable for many purposes, the wood of the yellow cypress is not extensively used at present, the cost of transportation to the seaboard being too great. On the Queen Charlotte Islands it descends to the coast. When lower levels have been cleared of other trees, the yellow cypress will be utilised. This wood is very durable, and on account of its pungent odour it is credited with resisting the teredo. Its grain is very close, and as the wood takes a very high polish it is greatly valued for interior finishing and for the manufacture of furniture. It commands a higher price than either Douglas fir or arbor vitæ. On account of its liability to shrink, lengthwise as well as laterally, it requires to be well seasoned before use.

Engelmann Spruce.

This characteristic spruce of the Rocky and Selkirk Mountains is the most useful tree growing in the interior of British Columbia, and is there largely used in bridge and trestle work and for heavy construction work generally. In the valley of the Columbia it is often more than 150 ft. in height and 4 ft. in diameter. The wood is very like that of the black and white spruces, and may be used for the same purposes. This was the chief wood used in the construction of the Canadian Pacific Railway from the Rocky Mountains westward.

Menzies Spruce, Sitka Spruce.

This spruce grows chiefly in the immediate vicinity of the coast, ranging in British Columbia from the International Boundary north to Alaska. Though averaging less in diameter than the Douglas fir, occasional trees of great size are found. Those cut for lumber are, however, seldom more than 5 or 6 ft. in diameter. No other tree on the West Coast is used for such varied purposes, and as it is easily worked up by machinery there is a great demand for it in the manufacture of doors, window sashes, boxes, shelving and interior finishing. The wood is very white, is elastic, and bends with the grain without splitting, so that it is much used in boat-building, staves, etc. It resists decay for a long time, and, like the Douglas fir, is not attacked by insects. The chief value of the Sitka spruce will, however, in the near future, be in the manufacture of pulp. As the shrinkage is usually very great, it is generally kiln-dried before using, or kept stored away until it is thoroughly seasoned.

White Pine.

White pine is not very plentiful in British Columbia. Still there is considerable distributed among other woods, especially in the higher altitudes. It is identical with the Eastern white pine, but grows large and tall, and is sound and clean. It is valuable for any purpose that soft woods can be used for.

While the above-mentioned are the principal woods, there are many others of considerable value.

THE ORDERS AND MODERN BUILDINGS.

"An interesting discussion ensued on the paper read on March 6th before the Architectural Association by Mr. A. R. Jemmett, F.R.I.B.A. (see the Journal of March 5th, page 224), Mr. R. Phene Spiers contributing some valuable notes."

Some Notes by Mr. R. Phene Spiers.

The subject which was suggested to Mr. Jemmett to take up is much too vast to be discussed properly in one evening, and I propose to take up two points only in his paper. First, the dictum attributed to M. Louis Duc: "There is no architect without the Orders." I do not know where he said it, or what the preamble was, but I do not think that the students in England recognise the extent to which the study of the Greek and Roman Orders is pursued in the Ecole des Beaux-Arts. It used to be the custom, when I was studying in Paris in 1860, and it may still be continued, to give once a year what was called the "*Projet de l'Ordre*." This consisted of some subject for design in which one or more of the Classic Orders was to be applied. I say, "or more," because I recollect that the first subject I had to take up was a design for two bays of the courtyard of some Government offices, in which the superposition of the Doric and Ionic Orders with arcades between was to be embodied. Two months were given to work out the design, and I remember that I made myself acquainted with every example known, from the Theatre of Marcellus and the Colosseum to the numerous courtyards in the Italian palaces. The second subject, in the following year, was for an Odéon or Music Hall, with a peristyle round the exterior and a portico on the front to be of the Greek Ionic order. Here, again, I made a profound study of every Greek temple of which diagrams had been published; and as parts of the building rose above the peristyle and portico, these had to be designed in accordance with the style, which necessitated a thorough research into the various accessory buildings of the sacred enclosure, in order to find *motifs* for my design. It was probably to this course of study that M. Duc referred; and his view was, that a student should make himself the master of the Orders instead of remaining their slave.

The other point in Mr. Jemmett's paper is the reference made to the use of the colossal order rising through two or more floors. Generally speaking, the problem is solved by rustication the masonry of the ground storey, so that it makes a solid and suitable base to carry the large order above; if, crowning this, there is either an attic storey, or, as in Somerset House, a lofty balustrade, the relative heights of these three subdivisions give scale one to the other. One of the chief difficulties to be met with in this combination is the undue height of the entablature of the great order, which should be a quarter of the height of the complete scheme—viz., including capital and base. This great height tends to interfere with the lintel of the second or upper floor window and the sill of the attic window, and there are some buildings in London in which the architect has cut through the architrave with a window, and utilised the frieze as the supporting member of the cornice. This is a mistake; the architrave is the correct supporting member, but the frieze is only a decorative feature which might be omitted.

There was no frieze in the Ionic temples of Ionia, but when the Attic Greeks introduced the order into the Erechtheion they omitted the Ionic dentil bed-mould, and in order to get sufficient height for the ceiling beams of the East and North porticoes

were obliged to introduce a frieze, and this was necessarily carried round the whole temple: they omitted the frieze, however, in the entablature of the caryatid portico. The omission of a frieze when a colossal order is employed would lessen by about one-third the depth of the entablature.

There is still another treatment of the subject which was employed by Mr. R. Norman Shaw in the New Zealand Chambers in Leadenhall Street. Now Mr. Norman Shaw is the grand master of fenestration; and when he was called in to design this building, he recognised at once that in this comparatively narrow street more light could be obtained up and down the street than from the side opposite; he therefore applied for permission to project some oriel bow-windows. He was told, however, this was not possible, but if he liked to set back his front then he could project his bow-windows. This his clients objected to, so he asked what proportion of the whole front would have to be in solid brickwork. I think he was told one-third. This he contrived in four great piers and a part of the ground storey, and between these piers and about 2 ft to 2 ft. 6 ins. back—viz., the required projection for his bow-windows—he sketched in these features and took his design again to the Metropolitan Board of Works, and obtained permission, provided the woodwork of the windows was kept $4\frac{1}{2}$ ins. behind the front of the piers. This regulation is now given up, but in 1873, when this building was erected, all window-frames had to be set back $4\frac{1}{2}$ ins. and in recessed jambs, because sometimes when, in a Queen Anne building, where the frames were flush with the wall, if a fire took place they fell out and injured the firemen. These various enquiries led to the design of the New Zealand Chambers, which are not only the best lighted premises in the city, but the grandest and most impressive in design of any of Mr. Norman Shaw's works. These great piers rising from the ground to the main cornice have the same dignified aspect as that which is given by the employment of the colossal order, but at all events in this case, Mr. Jemmett's statement that it results in a "pleasing but most misleading effect," certainly does not apply. I would suggest, therefore, that our students should make a point of going down to Leadenhall Street, now that I have told the story of the conception of these New Zealand Chambers, to see how certain regulations and requirements may sometimes result, in the hands of a master, to an original treatment of the whole subject. As a matter of fact, I believe the bow-windows are not in wood but in iron, so there is no fear of their falling on anybody's head.

Mr. Alan Potter, proposing a vote of thanks, said that in two of the Roman orders, Doric and Ionic, he thought the arch should be included, because the entablature was designed in conjunction with the arch. He hardly agreed with Mr. Jemmett that the application of the orders was necessarily the method for emphasising particular parts of a design. The order, to his mind, was not a structural feature, but simply the clothing of a structural element in a beautiful design. The function of the order was the expression of the structure; and if we confined ourselves to Classic architecture we must retain the order.

Mr. Herbert Hall said Mr. Jemmett had laid particular emphasis on the functional aspect of the order; but the most interesting point was its application to modern buildings. The difference in its modern application was admirably illustrated in the new addition to the British Museum (which might in its character be considered ancient), and another building in Aldwych by the same architect. In this latter building the order was used in what might accurately be termed a modern way. The order was rendered in a diversity of methods; and in a jeweller's shop in Oxford Street it assumed very attenuated proportions. The order, to be used satisfactorily, continued the speaker, should fulfil a useful function combined with a definite expression. It was very satisfying to know that somewhere in a building a real column was acting in organic relationship with the building, and that the pilasters (the indiscriminate use of which the speaker had previously deplored) were simply the expression of a point, or were acting as an architectural chain. Columns also usefully emphasised the entrance to a building, as in the case of Waring's building in Oxford Street. Unless the order could be used in a noble way it had better be left out. Mr. Burnet was showing how one could use the order very well indeed, and Mr. Bolton had used the large scale order very successfully in Ingram House. He saw no objection to the large external order running through several floors; in a sense it was the expression of the lift shooting up the interior.

Mr. Curtis Green said they should be masters of the order—not its slaves. The speaker then referred to the observation attributed to M. Duc, that "there is no architect without the orders." Mr. Jemmett explained that this was a misprint, and should read, "there is no architecture without the orders." Mr. Green replied that he preferred the misprint. Continuing, the speaker said that all the men who were doing good work to-day were masters of the orders. Should we ever have an architectural dictator he should lay it down that no three-quarter columns and no pilasters should be used for ten years.

Mr. A. G. R. Mackenzie advocated the use of large orders in the way they had been so successfully used in Oxford Street. For himself, he thought that the column could be used very effectively as a screen; and the speaker concluded with a reference to the treatment in this manner of one elevation of the Piccadilly Hotel.

Mr. Jones said it seemed to him that the whole subject of town design resolved into a question of fenestration. The grouping of windows with piers between should be the customary means of expression, and the order should be regarded as a very rich and precious member to be reserved for some important part. By the repetition of the order *ad nauseam* they lost the sense of rarity. One façade to the Woods and Forests building, in Whitehall, was designed without introducing the order. The main front contained Ionic columns, obviously for the purpose of carrying on the lines of the Banqueting Hall and the War Office; but he could not help thinking that the design would have been finer had the columns been omitted. Huge columns necessitated the overhanging cornice, and very deeply recessed portions between to get the effects of light and shade. The gigantic column was, he thought, unsuitable to London.

Mr. V. R. Talvalker having spoken,

Mr. Alan L. Snow made some observations upon the original function of the

order, comparing it with its modern use in buildings where the entablature seldom formed the final and finishing member.

Mr. D. A. Forster thought it fallacious to trouble about expression at the expense of soundness of design.

Mr. Arthur Keen said he often wondered what the Greeks would think if they could see how we used the order. The method was not really a sound and creditable one. The screen at Hyde Park Corner was used in a proper way. Mr. Jemmett had treated the order from the æsthetic standpoint; and this was really the only way in which it could be accepted in modern use.

Mr. Jemmett, replying, said that to advocate expression and not structure was perhaps not quite orthodox sentiment. They might put up a structure, but it would not necessarily be architecture. It began to be architecture when it expressed emotion and human feeling. The flutings on columns and the triglyphs in the frieze above, although not in themselves structural, intensified the impression of structural purpose. If expression were not the thing they were aiming at there was no need for architects. He agreed that fenestration was highly important. They did not want elaborate repetition, nor should undue prominence be given to unimportant commercial buildings. The order should be kept for public buildings or for the intersection of street fronts. Concluding, Mr. Jemmett said, with reference to a remark by Mr. Hall, that the introduction of columns as a means of emphasising the entrance to a building was quite legitimate; but to say that an opening was too square or too wide, and to introduce columns merely to make a more pleasant proportion, was quite wrong. The danger he saw in it was that it might lead to putting orders in the wrong place. The purpose of the architect was impersonal.

COMPETITIONS.

Palais de Justice, Athens.

The time for sending in designs for the above has been extended from August 8th-21st to September 12th-25th.

Penrith Secondary School.

The awards in this competition are as follows:—1, Messrs. Harrison and Ash, Pilgrim Street, Newcastle; 2, Mr. W. P. Schofield, Leeds; 3, Mr. Theo. Halliday, Manchester. There was a very large number of competitors, about 200 architects having applied for particulars. The school will probably cost about £12,000.

Marylebone Town Hall.

In their report to the Marylebone Borough Council, the Town Hall Committee state that, considering that the Council might wish to choose their own assessor, and also to have the final choice of the designs submitted, they placed the matter before the President of the R.I.B.A., with the result that it has been agreed (subject, presumably, to the approval of the Borough Council) that the President shall nominate three gentlemen from whom one may be chosen as assessor, with whom two members of the committee should be associated in the selection of the designs.

Pavilion for Consumptives at Royal Hospital for Incurables, Donnybrook.

The awards of the assessor (Mr. A. William West) in this competition are as follows: 1, Messrs. Kaye Parry and Ross, 48, Kildare Street; 2, Messrs. Walter Doolin and Butler, 12, Dawson Street; 3, Mr. George P. Sheridan, 1, Suffolk Street, Dublin. The Committee recorded on the minutes their appreciation of the great

trouble and interest taken by the several competitors in connection with the preparation of the plans. The assessor considered that the plans were all well-drawn, clear, and definite, and showed considerable skill and ability on the part of the designers; also that the information accompanying the plans was full, and gave evidence of much care having been devoted to the matter.

LIST OF COMPETITIONS OPEN.

MARCH 21. ELEMENTARY SCHOOL, LUTON.—Luton Education Committee invite architects willing to compete in a limited competition for a new elementary school. Six architects will be chosen to compete, and those who are unsuccessful will receive an honorarium of £5 5s. each. Apply Secretary of Education, Town Hall, Luton.

MARCH 31. CHURCH, NEW CUMNOCK.—Particulars in our issue of March 7.

(R.I.B.A. have requested Members and Licentiates not to take part, see p. 260, March 8.)

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 1. "OWEN JONES" COMPETITION FOR WALL-PAPER DESIGNS, etc. Designs to be submitted to the Board of Education by April 1. The competition is open to students in schools of design. Six prizes are awarded by the Society of Arts, John Street, Adelphi.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

MAY 5. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250 for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea.

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C., invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

CORRESPONDENCE.

Responsibility for Dry Rot.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to your editorial of February 22nd, and the letter of Mr. Geo. Macfarlane in your issue of March 8th, may I remind those concerned that the Form of Contract issued by the R.I.B.A. in agreement with the Institute of Builders and the National Federation of Building Trades Employers contains the following (clause 11): "The Clerk of Works shall be considered to act solely as inspector and under the Architect, and the Contractor shall afford him every facility for examining the works and materials."

If clerks of works were strictly limited by the architect and builder to acting solely as inspectors, probably we should hear a great deal less of their iniquities than we do.

That it is not so is evident from the numerous complaints which reach the ears of those who frequent the meetings of builders, from the formal representations which have been made to public departments, and from the case which elicited your comment and this correspondence.

Why is the clerk of works allowed thus to usurp functions which do not appertain to his true position? Probably because he is the man-on-the-spot. The result seems to be that the architect relies on him for relief from many questions of detail, and has a natural tendency, if the clerk of works shows capability, to leave the general overseeing of the works to him. This in its turn makes it necessary to pass instructions through him to the contractor's foreman, and to rely upon his reports and back up his decisions. In large concerns like Government Departments, this tendency becomes very marked, and the clerk of works becomes in fact a resident architect.

The contractor's foreman naturally defers to the clerk of works as the architect's *alter ego*, and is liable either to become subservient to him, acquire an undue influence over him, or else be at loggerheads with him. Under such adverse influences, the works are apt to be either unduly prolonged or unduly expensive, or seriously defective, while the actual parties to the contract, viz, the building owner and the building contractor, have usually to pay the piper between them.

The clerk of works, according to his previous training, character, and capabilities, is: sometimes a loyal help to all parties concerned; sometimes a punctilious stickler for the letter of the specification, regardless of its spirit; sometimes a self-seeker who makes himself disagreeable with the sole object of either exalting his position or lining his pocket; sometimes one who boasts of the architects he has ruled or overruled, and the contractors he has bled or ruined, or, according to him, made; but whatever he is, probably the last thing he will admit is that his function is "to act solely as inspector."

It certainly is high time that architects and builders, jointly and severally, decided to adhere strictly in practice to the definition of the functions of clerks of works contained in Clause 11 of the R.I.B.A. Form. These imply that the clerk of works shall not give any orders on the works, but merely report in writing his observations to the architect; that all communications shall go to the builder through the architect and not through the clerk of works and the foreman. A. G. WHITE.

TRADE AND CRAFT.

"Sideroleum" and "Stoniflex." ■ ■ ■

"Sideroleum" is a wood preservative, which, applied to new wood used for building operations, for fences, poultry-runs, cycle and tool sheds, garages, etc., has the effect of hardening the wood so as to make it impervious to moisture, and proof against attacks of vermin, dry rot, fungus, and insects. With regard to dry rot, it is claimed that this wood preservative will not only prevent that disease, but arrest its progress. It is easy to apply, and penetrates the pores of the wood, so that the effect is not simply to give the wood a hard coating, but to alter the character of the wood itself. Moreover, as it imparts a fine nut-brown or green colour (according to choice), "Sideroleum" dispenses with paint, the preserving and staining of the wood being completed in one operation. It is stated that a gallon is sufficient to treat 220 square feet of timber.

"Stoniflex" roofing felt has been upon the market for some years. It presents an entirely weather-proof surface, and does not require annual coating. It contains no coal tar or pitch, but is rubber-like and very densely compressed. It does not become sticky, but remains pliable—neither cracking nor perishing with exposure to heat or cold. In fact, it appears to oxidise, and is practically everlasting. The proprietors recommend it as an ideal roofing for fowl-houses, hutches, kennels and sheds.

Samples of "Sideroleum" and "Stoniflex" (the latter in three thicknesses—weighing per roll 15 yards long and 1 yard wide, (a) 50 lb., (b) 35 lb., and (c) 24 lb.—and (c) lining felt) may be obtained from ironmongers and hardware stores, or in response to a postcard addressed to the manufacturers, D. Anderson and Son, Ltd., Lagan Works, Belfast, or Roach Road Works, Old Ford, London, E.

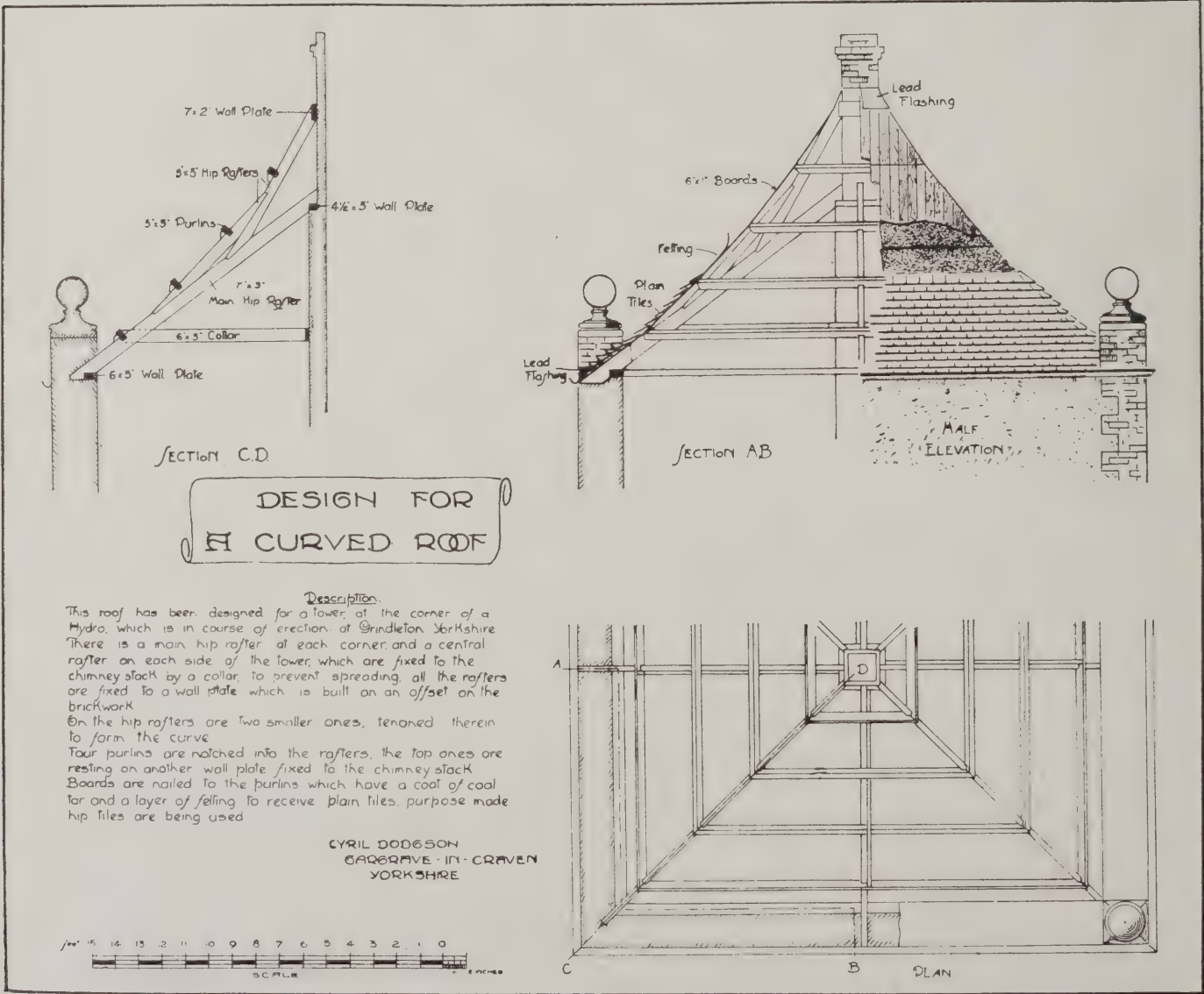
Fuller's Patent Scaffolding.

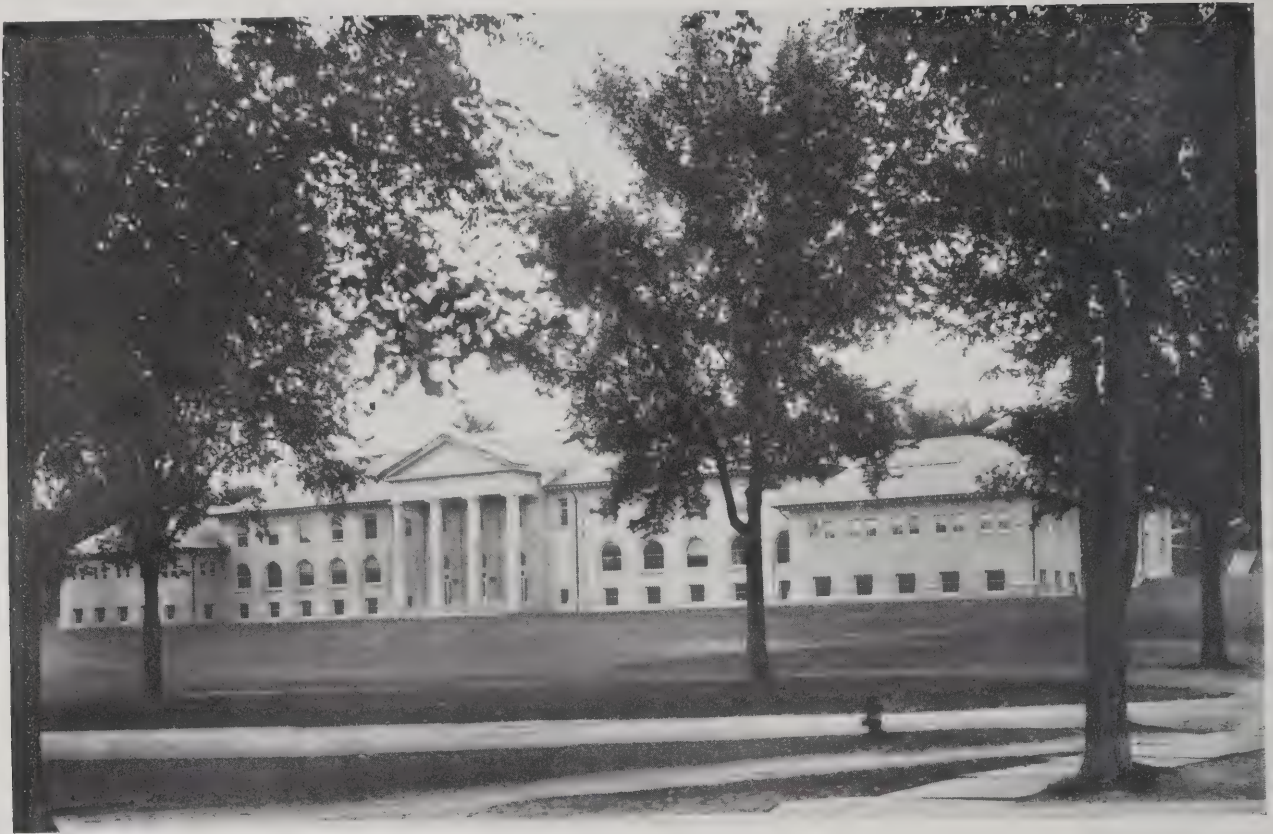
Briefly described, Fuller's patent scaffolding, which has recently attracted considerable attention, as seen on important building operations in London, consists of ordinary 2-in. by 7-in. battens mortised at regular intervals, scaffold boards being used as ledgers to carry the ordinary putlogs and boards. The scaffolding is tied in to the ledger by means of a patent putlog tie-iron, and by wedging the putlog in the ordinary way to the brickwork of the building. A bracket specially suitable for inside work and adjustable to any position supports the scaffold boards.

The advantages claimed for the system are as follows: In erecting or striking, one scaffolder and one labourer can do the work of six men using ordinary scaffold poles and cords. No bracing is necessary; and when once erected the scaffold requires no supervision, the common trouble of cords slacking in wet weather being, of course, entirely absent. The standards being in short lengths, a large number

A NEW HEATING AND DOMESTIC ENGINEERS' ASSOCIATION.

At a meeting of the engineering employers in the above-named trades held at Birmingham on March 3rd, it was resolved to form a branch association of the National Association of Master Heating and Domestic Engineers, to cover Birmingham and the three counties of Warwick, Stafford, and Worcester. An organising committee was elected, consisting of Mr. John P. Achurch (Parker, Winder and Achurch, Ltd.), Charles Barter (Benjamin Parker, Ltd.), G. N. Guest (Hollings and Guest, Ltd.), J. Jackson (J. Jackson and Co.), and W. L. White, 82, Upper Trinity Street Birmingham, the last-named being convener. The new branch association is to promote and forward the interests of heating and domestic engineers in the area above-named, and to be affiliated with the National Association, whose head-quarters are at 12, Great James Street, Bedford Row, London, W.C. (Mr. H. B. Watt, secretary).





Goldwin Smith Hall, Cornell University, Ithaca, N.Y.



Main Entrance "Blairsdon," Far Hills, N.J.



First Church of Christ Scientist, New York City.



Residence of F. H. Goodyear, Buffalo N.Y.



Office of the Carnegie Institution, Washington.



New York Public Library, Fifth Avenue, New York City.



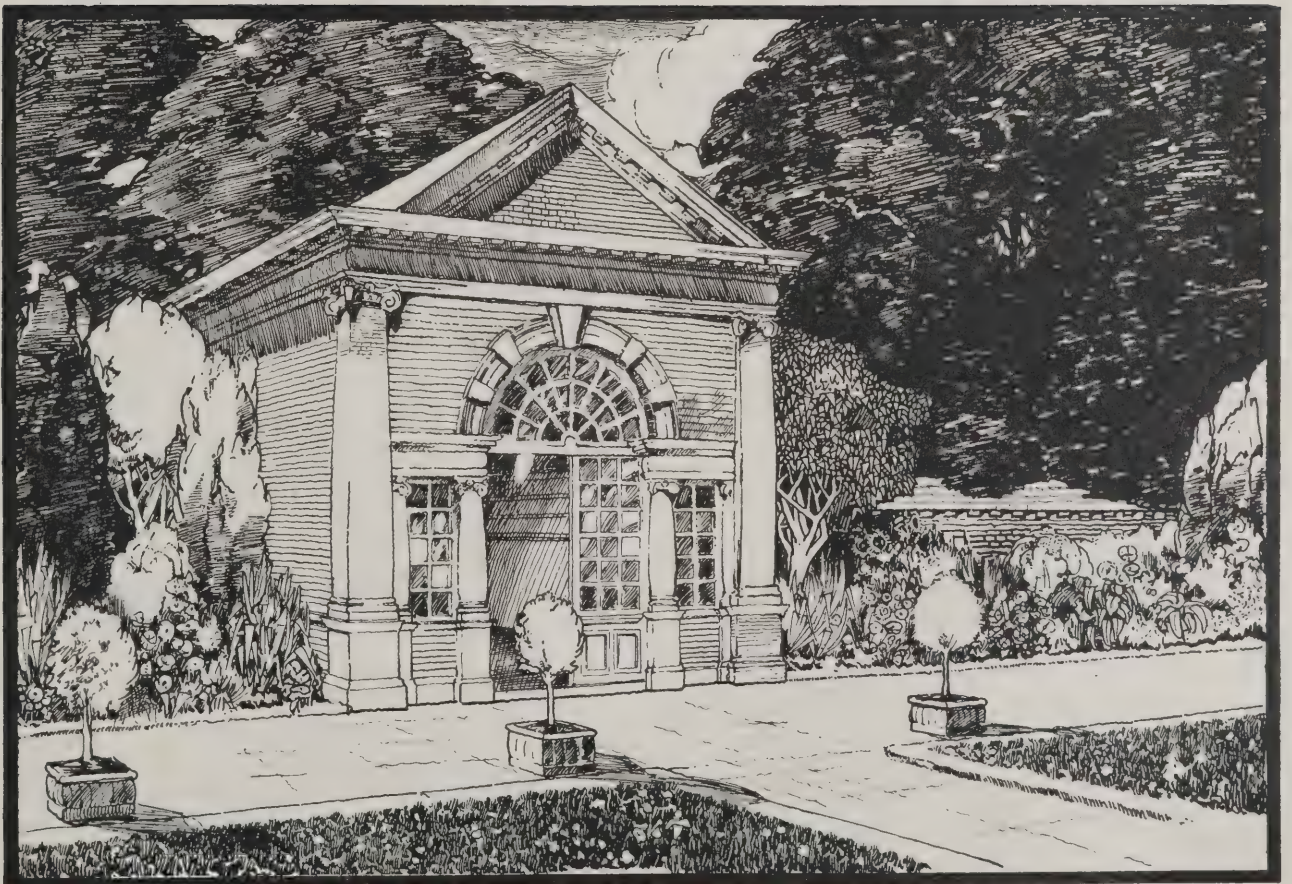
The Misses Ely's School, Greenwich, Connecticut.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MARCH 22nd, 1911.

Volume XXXIII.

No. 843.



DESIGN FOR A SUMMER HOUSE, BY WRATTEN AND GODFREY.



The facing is of narrow Black Country bricks, red and plum-coloured, with tile bands in cement. The long window to the left of the doorway lights the staircase.

ENTRANCE TO ST. MARY'S VICARAGE, BEARWOOD, BIRMINGHAM. S. N. COOKE, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

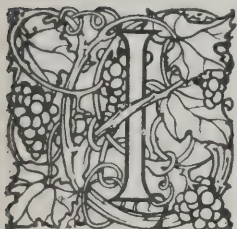
MARCH 22nd, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33, No. 843.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

French and English Cathedral Architecture.



It has become the fashion with American writers on architecture to speak of French Gothic, especially as illustrated in the cathedrals, as the only true Gothic architecture, English Gothic being either entirely ignored as not worth consideration, or referred to only in contemptuous terms, and illustrated

with details carefully selected to show some weak point which is represented as typical of the English style. No doubt France is the true cradle of Gothic, and in the early days of the Gothic Revival in England the English style was unduly exalted, and French Gothic almost overlooked, until Burges, who founded his own style much more on French than on English precedent, did something to open people's eyes to the glories of French Gothic, and prepared the way for a wider view of the subject. But admitting that French is the grander and more virile style, and shows a larger number of fine examples than England can boast, there is still something to be said on both sides; and a comparison of the cathedrals of the two countries shows that there are weaknesses in French Gothic and beauties in English Gothic which have been alike rather overlooked by modern writers, and which furnish matter for useful architectural criticism.

Our attention has been called to the subject by the publication of Mr. Bumpus's book on some of the French Cathedrals.* Mr. Bumpus's books on architecture have been rather of a popular order, and we have not attached very much importance to them in a general way; but this one is certainly the best that he has produced, and contains a good deal of interesting historical information in regard to the various buildings described; and the sheet of small comparative plans which has been added on a fly-leaf is a useful addition to the book; so much so that it might well have been given a more prominent position. Our complaint about his previous books was that they gave no plans. Possibly, however, the omission of plans in those, and the curious way in which they are subordinated in the present volume, is due to the prejudices of the publisher. Plans are not popular with the general reader, who wants to be amused rather than informed; and they are therefore very likely regarded as a blot upon a popular treatise.

These plans serve to illustrate one out of the three most marked differences in the general design of English and French cathedrals. All but one represent the *chevet* plan—the apsidal east end with radiating chapels—as typical of the French plan, as the square east end (after the Norman period) is of the English plan. This preference for the square east end in England is probably a reversion to earlier Saxon practice. While the Norman influence was fresh in England, in the half-century immediately succeeding the Conquest, and while the cathedrals were built by Norman architects, the Continental form of the apsidal east end prevailed, and there are few square-ended choirs of later style which have not the foundations of a Norman apse somewhere beneath their floors. But

as the Norman element became more fused into the English element in the country, the cathedral builders harked back to what was evidently the older tradition in this island. There seems to be no more in it than that; it was not so much architectural choice as ancient precedent. Of the superior effect of the *chevet* termination there can be no doubt; as Mr. Bumpus remarks, it seems curious that when it was once adopted in so important a church as Westminster, it should not have been imitated elsewhere. But Westminster was built obviously under French influence or example; apart from this, native tradition prevailed. The *chevet* form, indeed, brought the French architects under some difficulties in the ranging of the arcade of the apse with the broader arches of the straight portion of the choir, and led, as we see at Le Mans and Beauvais and elsewhere, to an awkward-looking stiling of the arches; but this defect is more than compensated for by the superior beauty and interest of the general design as compared with

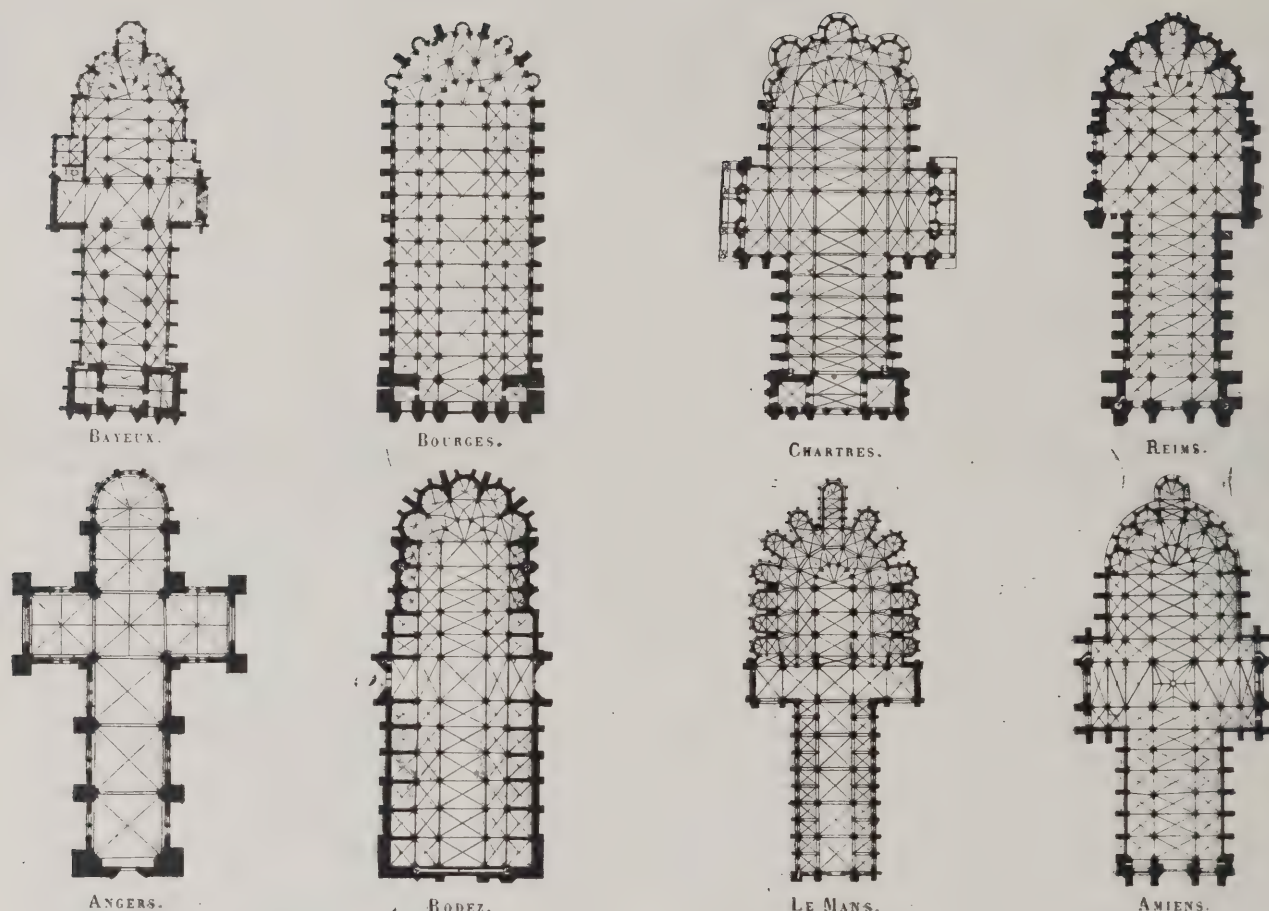


MEAUX CATHEDRAL: TRANSEPT WINDOW.

the tamer effect of the flat east end. A characteristic of the English plan, too, is its far greater comparative length—also probably a reversion to Saxon tradition; and it is observable that while the English plan tends to narrow towards the east end, the French plan, in most of the finest examples, widens, sometimes to a marked extent, eastward of the crossing. Of the eight examples of plan given by Mr. Bumpus, five—Bayeux, Chartres, Reims, Le Mans, and Amiens—show this expansion of the plan towards the east end; a much finer architectural scheme than the contracting plan of the English cathedral.

The two other most important distinctions between the French and English type of cathedral are found in the treat-

*The Cathedrals of Northern France. By T. Francis Bumpus. London: T. Werner Laurie: 1911. Price 6s.



TYPES OF THE FRENCH CATHEDRALS.

ment of the west front and the centre. The French scheme, that of the two western towers, masking the ends of the aisles, is the finest and most effective treatment there can be for a cathedral front. But its almost universal adoption in France deprives the west fronts of that variety of invention which is so interesting in the English cathedral fronts. With the exception of York and Canterbury, no two English west fronts much resemble each other; Lincoln might have been somewhat similar had not the builders of the west towers fortunately recoiled from removing the Norman screen; Durham, Wells, and Lichfield, show the twin-tower scheme, but they are entirely different in character both from each other and from the two archiepiscopal cathedrals; and Ely and Peterborough resemble nothing else either in England or France, and are distinct and individual architectural conceptions. Taken together, there is more of interest in these varied designs than in the rather conventional repetition of the same scheme in the fronts of the French cathedrals. And in the third point, the treatment of the centre, the English type has unquestionably the advantage. The centre tower makes a far finer architectural composition than the French mass of high roof, with only a *flèche* at the crossing. Mr. Bumpus claims that there are more centre towers in France than is generally admitted; but with a very few exceptions, such as St. Ouen, these are in the early churches, which had more solid piers and less ambitious height than the later ones. The French sacrificed the possibility of the centre tower for the sake of a greater interior height than the English builders ever ventured on. The interior height has a grand effect, no doubt, when you are once inside; but one cannot have everything, and it may be questioned whether it compensates for the loss of the grandest and most effective of exterior features.

Some of the differences between French and English Gothic in the interior treatment of the buildings are instructive on questions of design. One peculiarity of the French builders was that they almost invariably omitted what we call the ridge-rib in vaulting. Anyone who compares an English vault with

a French one will see how far more satisfactory and complete is the design of a vault with the moulded ridge-rib, emphasising the apex of the vault, and forming a backbone to the vaulting design; the omission of it is a distinct weakness in French work. On the other hand, it is a question whether the later English vaults do not lose something in constructive effect by their elaboration of ribs which are not necessary to the construction. The fan-vault is indeed a beautiful and artistic form of roofing of which England may be proud, and here the moulded ribs are all used in the same manner, and form a consistent design, but it is consistent in the sense that none of them have anything to do with the construction at all; they are merely effective and expressive decoration. But the French, except in a few late examples, contented themselves with the plain quadripartite vault in its structural simplicity; even in so elaborate a late church as St. Ouen the vault is a simple quadripartite structure; and the effect is better and more truly architectural than that of the late English vaults with their multiplicity of "*lierne*" ribs, or of intermediate working ribs, which only weaken instead of strengthen the construction. A point in which French Gothic is inferior to English is in the fact that the principle of growth from the ground line is less completely developed. The French habit of starting a vaulting-rib with a special base of its own, standing on the cap of the main arcade piers—as may be seen in the interior view of Soissons, for example—gives a far less complete effect than the English habit of running up the vaulting-shaft continuously from the ground line. Mr. Bumpus speaks with enthusiasm of the effect of the choir of Le Mans, which he considers the most beautiful interior in any French cathedral; and it is noticeable that this, with its long uninterrupted vaulting-shafts and the design of its piers, is precisely the most English in style of all the interiors which he illustrates. The French practice of placing the base of one shaft on the capital of the one below it is probably a relic of the traditions of Roman architecture, so much more strongly represented in France than in England.

Inigo Jones and Webb.

MR. GOTCH'S paper at the Institute of Architects, on some drawings by Inigo Jones and Webb in the Burlington-Devonshire collection of drawings, left on us the impression that he made out a considerable part of his case, to the effect that some of the work, especially at Greenwich, which had been attributed to Jones, was more probably that of his pupil and admirer, John Webb; but we must be cautious as to accepting the conclusion that there is nothing of Jones's idea in the architecture of the King Charles block at Greenwich. Mr. Gotch says that there is "no evidence" that Jones had prepared any large scheme for Greenwich, reaching from the Queen's House to the river, for Charles I.; but that is only negative testimony after all. And it must be remembered that Webb was an enthusiastic admirer of his distinguished master, and would, we should imagine, have really preferred carrying out a design by Inigo Jones to working out one of his own.

One interesting point emphasised in the paper was the extent to which Palladio is responsible for the general form of much of the work of the earlier English Renaissance. But perhaps the point most brought home to one by the original drawings which were exhibited on the screen was, how impossible it is to form any adequate estimate of the work of English architects of the Renaissance period from their drawings only. In the present day, drawings of modern architecture are often extremely flattering in effect, and it is not uncommon to find the effect of the actual building exceedingly disappointing in comparison with what the drawing had led us to expect. With Inigo Jones and his contemporaries and immediate followers the reverse is the case; their drawings are mere scrawls intended only to suggest the general scheme on which the building was to be worked out; the actual detail was evolved in the course of execution. The only features in the drawings attributed to Inigo Jones which give any evidence of his artistic power are the sketches of intended sculptures of figures and carved ornament, which are put in, though roughly, with the freedom and power of a master. As to the architectural lines of the drawings, it may be questioned whether anything like the modern ruling-pen existed in those days; lines seem to have been drawn in somehow with an ordinary pen, and sometimes even by hand, without the assistance of a ruler.

The sight of these clumsy drawings, however, and even that of the crude drawing for the classic west front for St. Paul's, with its huge and disproportioned scrolls on either side of the crowning feature, should not suggest any doubt as to the real genius of Inigo Jones, and the justice of the place of honour given to him alike by his contemporaries and by modern critics. As to the façade of St. Paul's, it was probably a very different thing when carried out from what it appeared in the meagre drawing shown at the meeting in question. Probably, had we seen the drawings for St. Paul's, Covent Garden, we should have got from them no idea of the effect of that grand portico, essentially Inigo Jones's architecture, though materially a rebuilding. Here, and wherever we can positively trace Inigo Jones's hand in an actual building, it is the hand of a master in architecture. And the respect felt for him by his contemporaries must not be overlooked. A sham genius cannot impose on those who live with him, and work with him, least of all on his own assistant. As it is said that no man is a hero to his valet, so it might be said, perhaps, that few architects are heroes to their draughtsmen. But Inigo Jones evidently was; his draughtsman thought him one of the greatest men in the world; and such a testimony cannot be lightly dismissed.

On the whole, therefore, it does not appear that Mr. Gotch's discoveries, interesting as they are, can have any great effect on Inigo Jones's reputation and position. Even supposing it had been established more clearly than is possible by such slender evidence, that some of the work commonly attributed to Jones may be more probably assigned to Webb, there is still no doubt as to which was the mastermind.



SOISSONS CATHEDRAL: THE NAVE, LOOKING EAST.

SAN MINIATO AL MONTE,
FLORENCE.

BY J. TAVENOR-PERRY.

When, in 1874, it was intimated to Ruskin that the Institute proposed to present him with a Gold Medal, he gave as his reasons for declining the honour four facts which he considered so disgraceful to the profession that he could not consent to be so closely allied to it as the acceptance of a medal might imply, and the second of three reasons was, to give his own words from his letter to Mr. Eastlake, that "the church of San Miniato in Florence, the most beautiful example of twelfth-century architecture in that city, had been turned into a common cemetery." No doubt the painful and often incongruous features of a modern Italian grave-yard have done much to destroy the beauty of its surroundings, but the architectural characteristics of this remarkable church remain undisturbed. Its great mass still looks imposing and picturesque when seen from any of the bridges; and although the approaches have been modified and the gradients of its hill-road better adapted to the needs of modern traffic, from its terraced platform may still be seen one of the most beautiful views in the world: Florence with its background of mountains, as described by George Eliot in the poem to her "Romola."

All authorities concur in placing the date of its foundation in the year 1013, under the direction of Hildebrand, Bishop

of Florence; and there is nothing improbable in this, since the neighbouring duomo of Pisa had been begun seven years earlier. The work of Hildebrand was, however, confined either to what is now known as the crypt, or it may have

been a rebuilding of an earlier church of which the present crypt formed a portion; and this is particularly shown by the fact of the plan of the upper church not coinciding with that of the church below. The same thing happened at Canterbury when the choir there was rebuilt; and in both cases some of the upper piers had to be carried down through the vaulting of the crypt, as there were no corresponding piers below to sustain them. The crypt, or, more properly, the Confession, of San Miniato consists of seven aisles, vaulted in plain Roman vaulting carried on marble columns, some of which are fluted, and may have been taken from an ancient building, standing about ten feet from centre to centre. The three central aisles terminate eastward in the semicircle enclosed by the walls of the apse of the church above; and on the chord of this stands the shrine of black and white marble containing the remains of San Miniato, who, according to legend, was the son of an Armenian king, and to whom the church is dedicated.

The west front of the church, which, like other mediæval Florentine façades, is not particularly graceful in its form, has, under an arcade of five arches crossing the lower part, three large square-headed doorways, which form not only the entrances, but the principal means of lighting the interior. The whole front is panelled by an incrustation of black and white marbles, with a picture in glass mosaic in the centre of the gable, and above it a band of inlaid ornament which appears to be contemporary with the pavement of the nave. The aspect of the interior as seen on entering is well shown by the accompanying illustration; and the appearance of spaciousness it presents, although its internal dimensions are only some 165 ft. by 70 ft., is due to its good proportions and the manner in which it is lighted. Except the little openings in the clerestory which barely suffice for lighting the roof, and one small square opening in the western gable, there are no windows in the church which afford any direct light, for those which surround the apse are filled in with slabs of translucent alabaster; and the deep gloom can only be dispelled by opening the western doors.



SAN MINIATO, FLORENCE, FROM THE NORTH-WEST.



SAN MINIATO: VIEW OF INTERIOR FROM WEST DOOR.

The church is divided into three great bays by two bold arches across the nave springing from half columns which form parts of composite piers of a quatrefoil shape on plan; and each of these bays contains an arcade of three arches standing on single columns. The shafts of these columns are monoliths of marble, and some of them may be ancient, as may also be their capitals, which do not fit them, and which are surmounted by a moulded dossier curiously reminiscent of Byzantine influence. The roof is of open timber work richly decorated in colour, having to each of the great bays four framed principals which are connected in the centre by a narrow gangway running the length of the church, the soffit of which shows in the photograph reproduced on the preceding page.

Up the centre of the nave extends a rich inlaid pavement, like a broad strip of oriental carpet, consisting of seven great squares some 12 ft. across, of most beautiful designs formed by black mastic let into the white marble pavement. The date of its production is given as 1207 on one of the slabs near the entrance, and it is probably the work of the same artist who did similar work at the Baptistery which is dated 1209. At the end of this pathway,

and immediately in front of the steps descending to the Confession, is the Chapel of the Crucifix erected in 1448 for Piero de Medici by Michelozzo Michelozzi, which contains over the altar a richly painted and gilt reredos.

On each side of this chapel and within the aisles are two staircases leading up to a gallery, which crosses the church from north to south on the choir level, but separated from it by the marble walls of the choir screen. This wall, which stands some seven feet in height, is of white marble, carved and panelled, and decorated with inlays of black marble and mastic. This screen, almost as unique in its arrangement as it is remarkable for its beauty, somewhat resembles the work to the walls of the great font in the Baptistery of Pisa, dated 1246, usually ascribed to Guido Bigarelli of Como, but which Rohault de Fleury speaks of as the work of Lino. At the south end of this screen, partly supported on the wall and partly on the marble columns, is an ambone of the usual Tuscan type, but richly decorated with carving and inlay, evidently the work of the sculptor of the screen walls. The desk for the Gospel is supported by a finely carved eagle standing on the head of a human figure which is again carried

on a lion; and the ambone is approached by a staircase directly from the choir, within which the stalls are of very beautiful intarsia work. Except for the roseate glow which penetrated through the slabs of alabaster at sunrise, or the fainter light which fell from the clerestory windows, the choir was always in gloom; but in the apse the great figure of Christ enthroned on a golden background, which caught every reflected gleam, was always visible.

On the south side of the choir is the Sacristy, the walls and vaulting of which were painted in 1388 by Spinello Aretino with the legend of St. Benedict. The grey-coated brethren of Monte Cassino are treated like the champions of the church-militant and remind one of Spinello's treatment of the warriors in the paintings on the walls of the Sala di Balia at Siena. On the south side of the nave opens out a small chapel designed by Antonio Rossellino to contain the beautiful effigy, which he also sculptured, of Cardinal Giovanni di Portogallo, who died in 1466, one of the most perfect pieces of monumental sculpture of the Italian renaissance. The roof of the chapel is decorated with medallions of the four Virtues by Luca della Robbia, and the walls have sculpture by Antonio Pollajudo.

On the north side of the choir stands a campanile erected by Baccio d'Agnolo (the architect also of the tower of S. Spirito) raised on the site of the ancient campanile ruined in the attack on Florence, in 1529, by Philibert of Orange the general of the Imperial armies. When to the unnatural alliance of Pope and Emperor it was decided that the liberties of Florence were to be sacrificed, the citizens appointed Michelangelo to be their *Commissario generale*, and entrusted him with the direction of the fortifications. The elevated position of San Miniato made it an important point, as from the old campanile all the movements of the besiegers could be noted. The result was, the tower became a mark for the enemy's bombards; and although Michelangelo suspended woollen mattresses from the cornice it became so shaken that it had to be rebuilt. Considerable portions of the fortifications which were then erected still remain, and these grouping with the church, give a picturesque and castellated appearance to the building when seen from the valley below.

OBITUARY.

Mr. Ernest Crofts, R.A.

Mr. Ernest Crofts, R.A., Keeper of the Academy, died on Sunday last, aged 64.

The Late Sir John Aird.

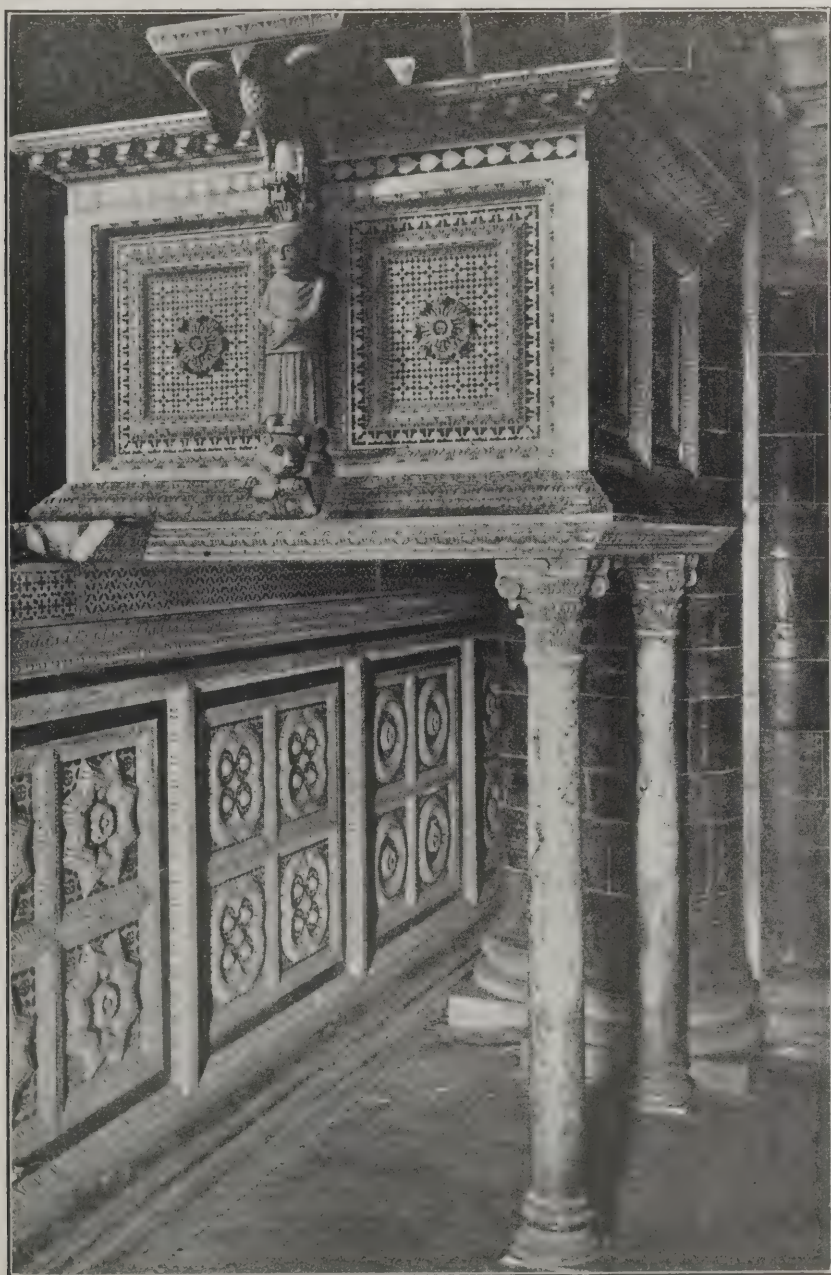
The will with two codicils of the late Sir John Aird has been provisionally proved at £1,100,000.

Mr. J. S. Kirk.

The death is announced of Mr. James Sheard Kirk, senior partner in the firm of Messrs. John Kirk and Sons, architects, of Huddersfield. Amongst the buildings for which the firm have been architects are the Crosland Moor Workhouse, the Huddersfield Union Offices, and the Marsden Parish Church, with which the deceased was closely identified. Mr. Kirk was in his 69th year.

Mr. Charles Berrington.

The late Mr. Charles Berrington, builder and contractor, of Bedford and Liverpool, left estate which has been proved at £331,935 gross. The late Mr. J. Howard Colls left property of the gross value of £419,797. But the record builder's estate is probably that of Mr. Edward Yates, of Herne Hill and Southwark, who died in 1907 leaving estate of the gross value of £919,414.



SAN MINIATO: DETAIL OF CHOIR SCREEN AND AMBONE.

INIGO JONES OR JOHN WEBB?

BY J. ALFRED GOTCH, F.S.A., F.R.I.B.A.

In his paper on "The Burlington-Devonshire Collection of Drawings," read before the Royal Institute of British Architects on March 13th, Mr. J. A. Gotch made not the least important of his many valuable contributions to architectural history. His careful examination of the collection points to the somewhat startling conclusion that much of the work that has been hitherto attributed to Inigo Jones should be assigned to his nephew and assistant, John Webb.

AT a general meeting of the Royal Institute on June 27th, 1892, this collection of drawings was first exhibited to the members, and on December 17th, 1894, they were, by a Declaration of Trust, placed in the custody of the Institute. We are indebted to Mr. J. D. Crace for this valuable addition to the library. Attached to the Declaration of Trust is a schedule, which enumerates 17 bound volumes of drawings, mostly by Palladio; and two boxes of miscellaneous drawings in number about 295. Turning to Mr. Crace's description, he concludes his remarks on these loose drawings by saying, "These boxes require careful sorting before any satisfactory list of the contents can be made." It is these unsorted drawings which are the subject of the present paper. They have now all been sorted and arranged, and they have been numbered, so that the classification may be preserved, or perhaps improved, should further light be thrown upon the few which are still obscure, and there is in preparation an annotated catalogue.

They are of very great interest, being connected largely with our own Inigo Jones and his relative and assistant, John Webb. They throw some curious and, perhaps, unexpected light upon the relations of the two men.

Two Important Collections.

The two best known and most important collections associated with the name of Inigo Jones are those at the Royal Institute and those at Worcester College, Oxford. It is a curious fact that a careful investigation of both collections goes to show that they are both more closely connected with John Webb than with Inigo Jones: indeed, there is reason for thinking it highly probable that they are the two halves of the same original collection. It is said that Dr. Clarke, who bequeathed his architectural books and drawings to Worcester College, bought the latter from the widow of Webb's son. The original Webb collection, which (if my conjectures are right) was thus divided, consisted mainly of Webb's own drawings, but among them was a certain number made by his venerated master. References occur in one or two books to some drawings by Jones preserved in the Soane Museum, but from a careful investigation recently made in company with Mr. Walter Spiers, the curator of the Museum, there is great doubt whether any of these drawings were made by Jones. In particular, those of King Charles's block at Greenwich, held by some to be Jones's original design for that building, must have been made at a much later date.

Our own collection illustrates in a most interesting manner the changes which have come over the methods of house-design as compared with what is to be found in the Thorpe and Smithson collections. It shows in what a new way the design both of plan and elevation was approached; how all-important accurate proportion was considered; and how profound an influence Palladio now exercised on design both in

methods and results. My immediate object, however, is to consider the following three points: (1) The draughtsmanship of Inigo Jones; (2) His relations with John Webb; and (3) The authorship of the design of the second portion of Greenwich Palace, known as King Charles's block.

Scarcity of Drawings signed by Inigo Jones.

There are not many drawings left which were actually signed by Inigo Jones. In the Burlington-Devonshire collection there are five, all architectural subjects. But there are others bearing his handwriting, and these may safely be attributed to him. A study of these goes to show that neat architectural draughtsmanship was not his strong point. There are three indeed (a porch signed "Inigo Jones fecit 1616," a certain house signed "Inigo Jones," and the west front of St. Paul's Cathedral, unsigned), which are surprisingly poor stuff for so great a man to have produced. The porch, dated 1616, was drawn after his final return from Italy, when he was 43 years old, and after he had studied the masterpieces of Italy. The west front of St. Paul's was begun some fifteen years later, in 1631. The design is classic in treatment, and was to be applied to a Gothic building. This, in itself, was no great fault, inasmuch as classic was becoming the prevalent style, and Jones had no competent knowledge of Gothic. But the design itself is a curious medley. The lower storey is well-proportioned and interesting. But the upper storey is a wonderful mixture of incongruities. The great scrolls are as much too large in scale as the lanterns, which crown the towers, are too small. The three central windows are rather overpowering, and the arch of the middle one bites into the frieze above it with indefensible voracity. I venture to think that no one, on seeing this drawing, would take it to be the work of a master in architecture. Curiously enough, when the work was carried out, the lower storey was masked by a widely projecting columnar portico of good design; while the upper storey was carried out very much as drawn, but with a few improvements. These will be readily seen on comparing the drawing with Hollar's view or with Kent's elevation, which agree, on the whole, tolerably closely.

John Webb expressly credits Jones with the (then) recent improvements to St. Paul's: he was, he says, "the sole Architect . . . who, in faithful Discharge of that Trust reduced the Body of it from the Steeple to the West End into that Order and Uniformity we now behold; and by adding that magnificent Portico there, hath contracted the envy of all Christendom upon our Nation, for a Piece of Architecture, not to be paralleled in these last Ages of the World."

The drawing of the house (signed by Jones) shows a small building of no great architectural pretensions, a columned portico being the only feature having any detail of consequence. It would probably have been designated "a lodge," and it was, like many houses of the time, rather an exercise in proportion than an attempt

to provide suitable accommodation for daily wants.

Jones's Draughtsmanship.

It is curious that of the five signed drawings two should give so inadequate an idea of the master's power. Two of the other signed drawings give the details of a gateway for Lord Lincoln at Weybridge. The design of the front shows a massive, well-proportioned archway. It is true that, if it were the work of a less famous man, exception might be taken to the woolly masses that adhere to the pillars and the cornice. There are, however, precedents for this particular treatment in some of Serlio's designs. There is a certain amount of free-hand drawing in this example; and in those which follow it is still more in evidence, and the conclusion to which all these drawings point is that Jones was much more at home with his pencil and pen than he was with his tee-square and compasses. He was at his best in his sketches for carving, and particularly in those of the human figure. His cupids, his caryatides, and his busts are touched in with a skill and facility that would have done credit to any of his beloved Italian masters. Where straight or formal lines were required, he was happiest when he ruled them in with his ordinary pen, or even dispensed with a ruler and got them as straight as he could with his unaided hand. There is one drawing (of a chimney-piece) attributed to him where all the carving, including cupids and angels, has been admirably sketched in and shaded, while the architectural members are only faintly indicated, and have been left for a more mechanical person to finish; but the mechanical person never did his work, and the drawing remains incomplete.

This view of Jones's draughtsmanship is strengthened by his sketch-book, preserved at Chatsworth, of which a few facsimile copies were made, one of the number being now at the Soane Museum. In this little collection there are none but free-hand drawings, and those mostly of the human figure and costume, all done with great skill and freedom.

Curiously enough, John Webb, in his "Vindication of Stone-Heng Restored," expresses the same view of his master's drawing: "Mr. Jones," he says, "was generally learned, eminent for Architecture, a great Geometrician, and in designing with his Pen (as Sir Anthony Vandike used to say), not to be equalled by whatever great Masters in his Time for Boldness, Softness, Sweetness and Sureness in his Touches."

Relations of Jones and Webb.

We now come to the relations of Inigo Jones and John Webb. Jones was the uncle of Webb, and took the lad into his office in 1628, when he was seventeen years old. It is assumed, and probably with truth, that Webb remained working with his uncle until the latter's death in 1652. Webb became a very excellent architectural draughtsman; and if the estimate of Jones's powers in this direction suggested by these drawings be correct, Webb must have been his right hand. Webb has always been regarded as a pale shadow of Jones. He himself had an unbounded admiration for his master, and asserted that Jones's reputation abroad was greater than it was at home. His contemporary, Evelyn, speaks of him as "Mr. Webb (Inigo Jones's man)." But an unprejudiced examination of the Institute drawings and those at Worcester College seems to lead to the conclusion that in spite of the depreciatory attitude of those who have written about Webb, a little reputation ought to be added to his stock, and perhaps, a corres-

ponding little deducted from that of Inigo Jones.

The Assignment of Greenwich Hospital.

In Kent's two volumes of "The Designs of Inigo Jones," the drawings are by Flitcroft. Whence did he get his particulars? The original drawings are extant. Who made them? The writing on them suggests to me that they were not by Inigo Jones, but by John Webb. (Mr. Gotch detailed his reasons for supposing that the credit for the design of King Charles's block at Greenwich must be transferred from Jones to Webb; unless, indeed, we feel ultimately compelled to re-transfer it to Palladio, for on plate 12 of the second book of Palladio's "Architecture" is the detailed elevation of a house at Vicenza, built by the Counts Valmarana, to which Webb's elevation of the end blocks of his building bears a striking resemblance.)

The Hand is the Hand of Webb.

It is not difficult, said Mr. Gotch, to distinguish between the draughtsmanship and writing of Jones and those of Webb, and the conclusion forced upon the mind is that even in the present day much that is really Webb's has been attributed to Jones. "It may, of course, be replied that the hand is the hand of Webb, but the inspiration is that of Jones. To which I respectfully answer, Produce the evidence.

"It is by no means my desire to decry Inigo Jones, or to start a crusade against his reputation. There is no wish to suggest, for instance, that John Webb was the first and greatest of architectural ghosts, and was exploited by his famous master. But it is only right that the evidence of these drawings should be carefully weighed, and one result, I cannot help thinking, will be the conclusion that John Webb was not merely a pale shadow of Jones, but that he was a man of remarkable independent ability."

Discussion.

Mr. J. D. Crace, proposing a vote of thanks, referred to his connection with the Institute collection of drawings—an incident in his life upon which he looked back with unmitigated satisfaction. The date of the Queen's House at Greenwich, he continued, was beyond question, as it was actually inscribed on the front of the building. John Webb certainly deserved higher praise as an architect than he had hitherto received. He, Mr. Crace, had no doubt in his mind that Webb was actually responsible for King Charles's block. It was not difficult to see how the design came to be attributed to Inigo Jones. It was quite natural to ascribe the work to the greatest name that history suggested. He was surprised to hear of the existence of the foundations of old Greenwich Palace in the east wing. He had always understood that the old Palace of Henry VIII. extended east as far as, or a little beyond, the present east gate of the Hospital. Concluding, the speaker complimented Mr. Gotch upon his careful analysis of the old drawings and for his very able paper.

Mr. Lawrence Weaver, seconding the vote of thanks, doubted whether Webb did the drawing of the ceiling at Wilton, although the handwriting was his. This should be a lesson to gentlemen present not to allow assistants to sign drawings. A thorough search, he thought, would reveal some reference to Webb's work at Greenwich. He was not sure that it was quite fair of Mr. Gotch to say that the onus of proof lay with Inigo Jones. The documents of the period were certainly very sparse, but he thought that Jones would not have gained such a reputation

on "ghosts." The drawing of Inigo Jones's addition to the west front of St. Paul's was rather a parody on the work as actually carried out. The present St. Paul's Church, Covent Garden, was, as we knew, not the original church designed by Inigo Jones, that having been destroyed by fire. But the present church gave a fair representation of Jones's original work; yet it differed from the drawings of the period, which did no great justice to Jones's design.

Mr. W. R. Adkins, M.P., said it seemed that certain contentions of Mr. Gotch had the support of the history of the period to which he referred. It was quite plausible that Jones, called in to design works like masques, should find a greater delight in the freedom of the pencil than in the more strictly scientific instruments. Jones, it seemed, was greater in the less rather than the more acutely technical detail in design. The Queen's House at Greenwich was finished in 1635; and he thought that the period from 1631 to 1642 was, for obvious reasons, an inconvenient one for the spending of public money on works of a public character. During that period Charles I. was hard put to it to find money; and there was a very great lack of resources for these undertakings. That Inigo Jones's design for Temple Bar was not carried out was reasonably to be ascribed to this fact. In his concluding remarks, the speaker

alluded to the extraordinary reverence that was paid, at the Restoration, to things done before the Civil War, and quoted some lines by Dryden to Congreve in support of his contention.

Mr. J. T. Maine (Librarian to the Duke of Devonshire, at Chatsworth) said that the paper was to him one of extreme interest, as, in the course of his work at Chatsworth, he had to consult Inigo Jones's drawings for masques, and also his sketch-book. There could be no doubt that Jones was more at home in freehand drawing than when trammelled with instruments. His first sketch-book gave an impression of great power and mastery. In his sketch-book used on the journey to Italy, before 1620, he had apparently jotted down with the pen the things that interested him as he stood before them. The drawings for figures in the masques were first done in pencil, and, after many erasures and corrections, subsequently inked in. It had occurred to him that there seemed to be two hands at work in the drawings, and he remembered saying to Dr. Ashbee, "Who is the other man?" Mr. Gotch had given them a great deal of illuminating information on the subject. The paper, he continued, threw much new light on the drawings at Chatsworth. With regard to the drawing for Wilton House ceiling, was it not possible that the quality of the ink and the handwriting might determine



RESIDENCE OF GEO. L. RIVES, NEW YORK CITY.
CARRÈRE AND HASTINGS, ARCHITECTS.

whether the drawing was done by the same hand?

Mr. C. R. Peers said that until the age of forty-two Inigo Jones was an arrant amateur. Until after his return from Italy his chief artistic work was connected with the designing of scenery for masques, which could hardly be called architectural work. Inigo Jones lived in a most critical time for English architecture; and it could not be claimed that what he gave us was a vernacular style. The Banqueting Hall in Whitehall was absolutely different from anything else contemporary with it. But Jones founded a basis of scholarly architecture; and Webb seemed to be greatly influenced by the work of his master. Webb's mind was not so scholarly; but he produced work that was considerably affected by the scholarly inspiration brought by Jones from Italy. Probably one-third of the work that it was customary to attribute to such men as Jones, Wren, or Gibbons was undoubtedly not their own, but that of men who were taught by them, and who produced work in the same style.

Mr. Gerald Horsley thought that the paper taught a good deal about draughtsmanship. The drawings they had seen on the screen were very much of the quality of Palladio.

Mr. Maurice B. Adams said he had long been familiar with the drawings. The draughtsman, whoever he might have been, did seem to realise the gist of the whole thing, which many of our modern and more adroit draughtsmen missed. He wanted draughtsmen to study the drawings themselves, and to get true proportion and scale.

Mr. Leonard Stokes said that if Webb did work that was attributed to Jones he thought it only right that we should have the facts.

Mr. Gotch, in reply, said, with regard to the ceiling at Wilton, that the drawing had Webb's handwriting upon it, and it seemed quite consistent with what we could see of Webb's power as a designer. It was quite natural, he thought, that Jones should absorb more than he deserved; and he could quite well lose some of the credit without at all detracting from his reputation. Nine of the drawings for Whitehall Palace were done by Webb. It was customary, continued Mr. Gotch, to believe that the Banqueting Hall was the only piece of a large scheme carried out. He questioned whether this was the case, and suggested that the Hall was erected as a complete building, and that it was afterwards proposed to add to it. The portico of St. Paul's, which was so much extolled, was not represented by the drawing which he had thrown on the screen. Regarding the drawings for masques, it was quite possible that Webb, born in 1611, and joining Jones in 1628, helped with the later masques; but it was improbable that he helped with the early ones.

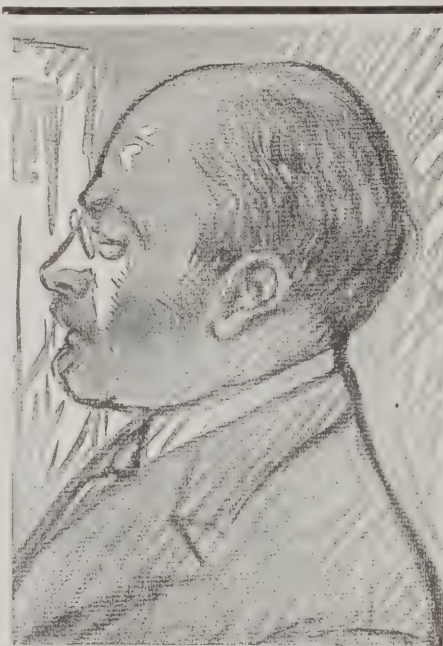
Paper and watermarks were important factors in the examination of old drawings; but as they were usually mounted it was difficult to utilise the evidence that would be thus afforded. The great advantage of the Worcester Collection was that they were unmounted. If they turned over the pages of Palladio, and then those of Kent, they would plainly see the source of inspiration of English architecture. The drawings were all founded on Italian examples. In support of his theory that Inigo Jones was credited with work for which he was not actually responsible, Mr. Gotch quoted the instance of the book on "Stonehenge Restored," which was published from in-digested notes after Jones's death.

THE WORK OF THE LATE JOHN M. CARRÈRE.

The untimely death of Mr. John M. Carrère, which was announced at last week's meeting of the Royal Institute of British Architects, will call forth universal regret. Mr. Carrère, whose death was the result of a collision between a tram-car and a motor cab, was to have read a paper on "The New York Public Library" before the Institute in May next; and the unfortunate accident actually occurred just before his intended departure for England.

Mr. Carrère, who was fifty-two years of age, was a partner in the firm of Carrère and Hastings, who, since the break-up of the partnership of McKim, Mead and White, have undoubtedly taken first rank among American architects. John M. Carrère and Thomas Hastings were both draughtsmen together in the office of McKim, Mead, and White, and in the year 1885 they entered into partnership and commenced to practise.

Mr. Carrère was born in Rio Janeiro, Brazil, in the year 1858, but according to



THE LATE JOHN M. CARRÈRE.

the American and Brazilian laws he was an American by birth. He was educated in the schools of Brazil and Switzerland, and at the Ecole des Beaux-Arts became an "élève de Première Classe."

Besides works designed in collaboration, each member of the firm has worked in his individual capacity. Mr. Carrère devoted many years to the teaching of ethics, and to the education of the younger professional men in the art of design. The Society of Beaux-Arts Architects was founded in 1894 at his suggestion, and several ateliers were formed to work under the auspices of that society. Mr. Carrère was made the first Chairman of the Committee on Education, and he outlined the course in architectural design which has revolutionised the system formerly prevailing in the American colleges. The fundamental principle which he introduced into the American system of architectural education is, that design is the first essential to architecture—that whatever other training a student may receive he is wholly unfit to practise architecture unless thoroughly

trained in design. Mr. Carrère was for two terms President of the Society of Beaux-Arts Architects, composed of pupils of the Ecole des Beaux Arts residing in the United States.

The very important work of establishing the Art Commission of the City of New York was entirely Mr. Carrère's idea, and was put through by himself and his friends, notwithstanding the pessimistic views of the art interests at large.

Mr. Carrère was Chief Architect of the Pan-American Exposition, and Chairman of the Board of Architects in charge of the grounds and landscape features of the Exposition. Besides this, he has personally held other very numerous appointments.

The first notable success which he and his partner achieved was in the great competition for the Cathedral of St. John the Divine, New York, in which they gained the first premium; but the magnificent design was never carried out.

Two important works of the firm are the House and Senate Office Buildings, inspired directly from Perrault's colonnade of the Louvre and Gabriel's buildings on the Place de la Concorde, which to the architects represented the most complete and successful expression of the monumental architectural work of the eighteenth century in France. But however clear the source of inspiration, and however frankly acknowledged, there is no suggestion of slavish copying of the older work, but the scholarly study of a new and fresh design.

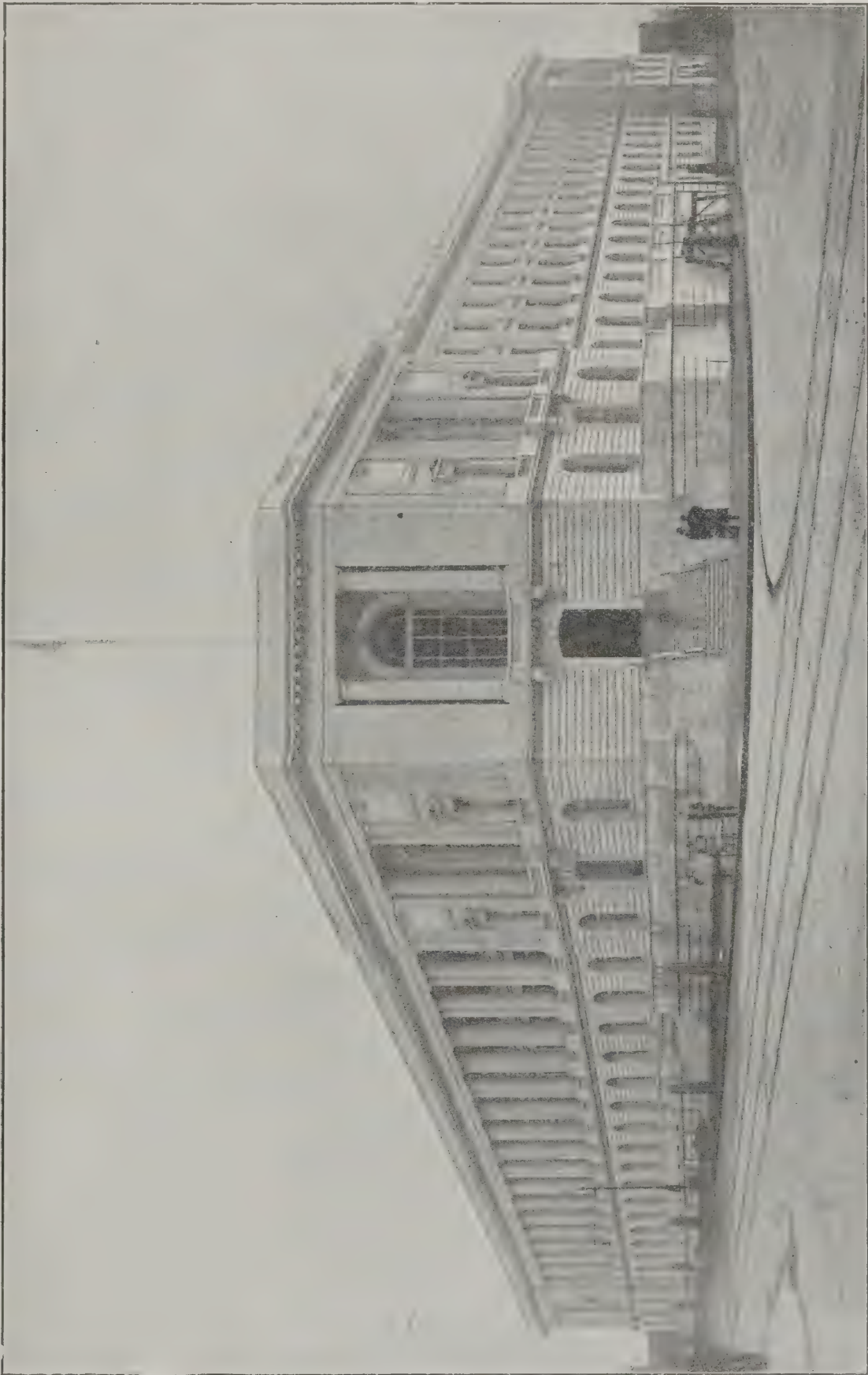
The following list represents the most important works completed by Carrère and Hastings.

Public and Educational Buildings:—New York Public Library, New York City; Annexes to the U.S. Capitol, Senate Office Building, Washington, D.C.; House, Office Building, Washington, D.C.; Borough Hall, Borough of Richmond, N.Y.; Ferry Terminal, Borough of Richmond, N.Y.; Paterson City Hall, Paterson, N.J.; Administration Building for the Carnegie Institution, Washington, D.C.; City Hall, Portland, Maine; fourteen Carnegie Branch Libraries in New York City; Manhattan Bridge and Approaches, City of New York; New Theatre, New York City; Woolsey Hall, and the Memorial Dining Hall at Yale University, New Haven, Conn.; Rockefeller Hall and Goldwin Smith Hall at Cornell University, Ithaca, N.Y.; Science Hall at Hamilton College, Clinton, N.Y.; McKinley Monument, Buffalo, N.Y.; Pedestal of Lafayette Monument, Paris, France.

Churches:—Methodist Church and Parsonage, St. Augustine, Florida; Presbyterian Memorial Church, St. Augustine, Florida; Central Congregational Church, Providence, Rhode Island; Christian Science Church, New York.

Office Buildings:—Mail and Express, New York City; Pierce Building, New York City; Blair Building, New York City; Royal Bank of Toronto, Canada; Traders Bank in Toronto, Canada; Pan-American Exposition, Buffalo, N.Y.; St. John's Park for the City of New York; Hamilton Fish Park for the City of New York.

Country Estates:—E. C. Benedict, Greenwich, Conn.; C. Ledyard Blair, Peapack, N.J.; E. H. Harriman, Arden, N.Y.; Murray Guggenheim, Elberon, N.J.; Otto H. Kahn, Morristown, N.J.; Whitehall for Henry M. Flagler, Palm Beach, Fla.; Giraud Foster, Lenox, Mass.; Mrs. Richard Gambrill, Newport, R.I.; Walter Jennings, Cold Springs Har-



BUILDING FOR THE HOUSE OF REPRESENTATIVES, UNITED STATES CAPITOL GROUP, WASHINGTON. CARRÉRE AND HASTINGS, ARCHITECTS.

bour, L.I.; Colonel Oliver H. Payne, Esopus, N.Y.

City Residences:—Mrs. Richard Townsend, Washington, D.C.; Mrs. Ralph Ellis, Washington, D.C.; Honourable Elihu Root, New York City; Honourable George L. Rives, New York City; Doctor C. A. Herter, New York City; Charles F. Hoffman, New York City; Burrah Hoffman, New York City; Richard M. Hoe, New York City; Doctor E. K. Dunham, New York City; John H. Hammond, New York City; Frank H. Goodyear, Buffalo.

A complete and fully illustrated account of the firm's work was given in our "Architects of the Day" Series, in the issue for May 18th, 1910. In the present issue the centre plate illustrates some representative buildings.

A ROYAL REBUILDING SCHEME.

At the recent meeting of the Council of his Royal Highness the Prince of Wales, at which his Majesty the King presided, a scheme for the rebuilding of the Duchy of Cornwall Estate at Kennington was under consideration.

The Estate has suffered in the past from the practice which prevailed in the first half of the nineteenth century of granting small plots of land on leases for terms of

three lives. The system was happily ended by the Prince Consort, but many of the old leases are still outstanding, and the property till recently was so interspersed with houses held on this precarious tenure that it has not been possible for any comprehensive scheme for dealing with the estate as a whole to be carried into effect.

Efforts, however, have been made, whenever sufficient space was at disposal, to improve the housing accommodation by the erection of improved dwellings.

In March, 1910, after a number of old leases had expired, his Majesty, as Prince of Wales, commissioned Mr. S. D. Adshhead, Professor of Town Planning at Liverpool University, to report on the condition of the property and to make suggestions for its improvement.

This scheme, which was considered at a recent meeting of the Council, practically involves the entire reconstruction of the older property. The proposal is to build improved cottages and small seven and eight-roomed houses of two storeys over the greater portion of the estate. Apart from a small number of three-storeyed dwellings for old tenants, and superior flats facing the Oval Cricket Ground, the erection of block dwellings is not contemplated.

THE GREEN MARBLE OF CONNEMARA.

It is a well-known fact that Ireland has mineral resources of great value which only need the necessary capital for their exploitation, and prominent among these resources are marble and building stones. Connemara is rich in deposits of the very fine green marble which bears its name. This marble has been known to architects for a long time past, but, as with other minerals in Ireland, great difficulty has been experienced in securing it in any quantity and in large enough sizes. The matter is purely one of business enterprise. The marble is there, and it only awaits the arrival of a development company organised on up-to-date lines and equipped with modern plant in order that it may be available for architectural and other requirements. It is with the express object of effecting such development that a company is now being formed—the Connemara Green Marble Quarries, Ltd.—(offices, Carlton House, Regent Street, W.) with a capital of £100,000. This company proposes to acquire 1,000 acres of land at Recess, County Galway, containing vast deposits of the green marble, of many different shades, to quarry the material, and to place it in any desired quantity at the disposal of the architectural profession and building trades. The deposits have been examined by experts, who speak of "a practically inexhaustible supply of the finest grade of all shades of very beautiful and rare green marble," and as it is estimated that the total cost of production will not exceed £4 per ton on an annual output of 7,000 tons only, while the selling price would be £9 per ton, and more—some of the deeper and rarer shades realising £30 per ton—there seems to be the prospect of a good investment. Dividends of from 25 to 30 per cent. are mentioned in the prospectus.

Marble is now being increasingly adopted as an interior finish to walls of business and other premises—particularly in the United States, to which a considerable supply of Connemara marble has been shipped for some years past—and the exploitation of a great deposit of fine material in our own Kingdom will doubtless be followed with great interest by architects and builders.

LONDON MASTER BUILDERS ASSOCIATION.

The monthly meeting of the Council was held at Koh-i-Noor House, Kingsway, W.C., on Thursday, March 16th, Mr. G. Bird Godson in the chair, supported by the officers and a large number of members.

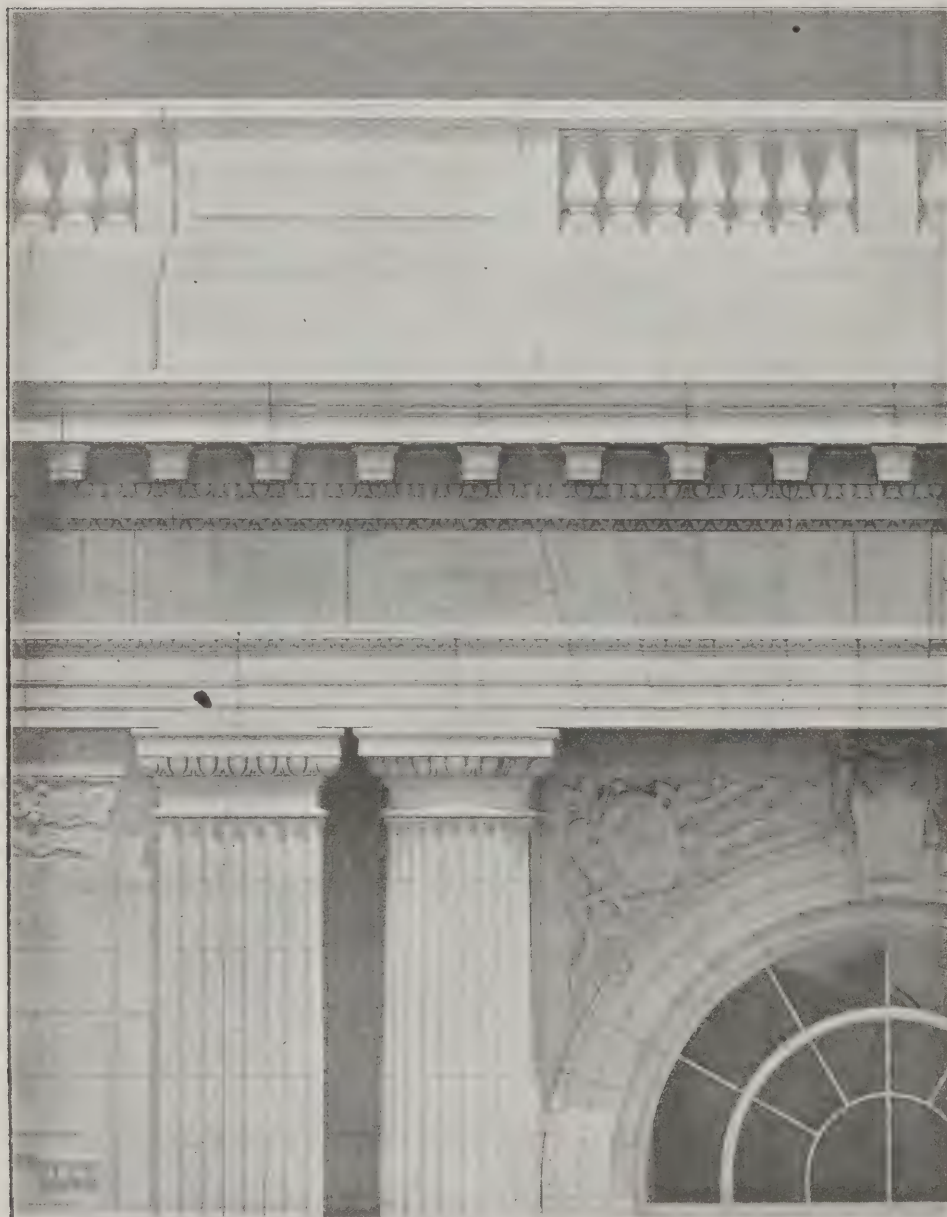
The quarterly financial statement was presented by the Finance Committee, and, after discussion, adopted. The various committees for the year were appointed, also the conciliation boards for the various trades.

A proposal for affiliation from the Master Decorators was considered, and it was unanimously resolved to agree to the same, it being considered an important step towards unity in the trade.

Various items of interest to the Trade were discussed. Mr. F. J. Gorham, builder and contractor, of Point Hill, Greenwich, was elected a member of the Association. Messrs. W. Bloore and Son, timber merchants, of South Lambeth Road, were elected associate members.

Bolton Improvement Scheme.

Mr. Thomas Mawson, Hon. A.R.I.B.A., was assisted by Mr. Robert Atkinson, A.R.I.B.A., in the preparation of this scheme, dealt with in our last issue.



BUILDING FOR HOUSE OF REPRESENTATIVES, WASHINGTON: DETAIL OF FACADE. CARRERE AND HASTINGS ARCHITECTS.

MAGAZINES & REVIEWS.

In the "Art Journal," Mr. Luther Hooper, in an article on "Art in the Church" (under the serial heading of "Art of To-day"), observes with only too much truth that "no department of art has suffered more from the separation of design from workmanship than that of painted glass." But the criticism might be made with equal truth about the whole field of what is called church art—in silversmith's work, and in textiles, as well as in stained glass. For many years all these things, but more especially the stained glass and the church plate, have been produced by trade firms, with the natural result that they have lost vastly in artistic value. We are only just beginning to emerge from this influence of trade art, the ill effects of which are more noticeable in stained glass than in any other form of work, because it is in itself an art of such beautiful capabilities, and because no other form of decoration is so prominent in its effect on the interior of a building. Numbers of old parish churches are disfigured by these windows put in by trading firms, and actually designed by workmen in their employ whose names are not allowed to appear, and who therefore can have no pride or interest in their work. And when a window is designed by an independent artist it may be spoiled in the manufacture, for the colour effect is all-important; the real effect of coloured glass can only approximately be shown in a coloured cartoon, and there is no certainty that the original artist's ideal will be reached in the executed window. As Mr. Hooper suggests, the only way to ensure the best artistic results in stained glass is for the work to be put into the hands of independent artists, and for those artists to be not only the designers but the makers of the glass. "Artist in stained glass" ought to be as distinguished and honourable a title as "painter" or "sculptor"; and when it becomes so we shall have the chance of seeing something really fine in modern stained glass. Among other articles in the same issue is one on "The Glamour of Landscape," by Mr. Lewis Hind, which is mainly occupied with observations on and illustrations of the landscape backgrounds of the early Italian painters; a most interesting subject which has hardly received sufficient attention from students of landscape art.

The "Burlington Magazine" contains a short article by Mr. F. W. Hasluck on a rather new subject—"Genoese Lintel-reliefs in Chios." The island of Chios was for more than two centuries (1346—1566) a dependency of Genoa, and there have been preserved there a certain number of sculptured lintels, similar to those found on some of the palaces of Genoa, and no doubt carried out by Genoese workmen. Two of these, now in the South Kensington Museum, are illustrated. The issue contains an article on "Old Marcasite Jewellery," by Mr. D. C. Falcke. Marcasite, or "marquiseite," is a pyrite which, when faceted, can be used as an imitation of diamond, and, according to the author, was largely so used in the eighteenth century. Judging from the illustrations, a good deal of beautiful jewellery seems to have been produced in the shape of marcasite in decorative settings. Browning, whom nothing in art seems to have escaped, refers to marcasite in his drama, "Colombe's Birthday," where a courtier tells a visitor—

"Yon green urn's veritable marcasite,

The Pope's gift"; though Browning seems to have been under a mistaken impression that marcasite was

of special value, whereas it seems to have been in reality an inferior material used to imitate more precious substances.

The "Architectural Record" (New York) is very largely taken up with "Recent Philadelphia Architecture," including in two separate articles "City Buildings" and "Suburban Dwellings." There are a good many buildings among these with a strong British tradition about them; the Provost's Tower of Pennsylvania seems to have been suggested by Heriot's Hospital. St. Mark's Protestant Episcopal Church is a rather mild piece of late Gothic. The American architects, though following English Gothic, never seem to get into the true spirit of the style. The church of St. Francis de Sales, of which Mr. H. D. Dagit is the architect, is a more original building, owing something, perhaps, to the influence of the modern French quasi-Byzantine style; it is a domed church with twin towers or cupolas flanking the facade; both these and the central dome are said to be covered with polychromatic tiling, which would have a good exterior effect; but the building, as shown in the monochrome illustration, does not attract us much; the general effect is good, but the detail seems commonplace. The United States Post Office, Custom House, and Court House at Cleveland, by Mr. Arnold Brunner, is a fine square classic building, with a Corinthian order running through the upper three storeys, on a rusticated ground storey; the architectural scheme is what one has seen again and again, but it is well carried out in a scholarly manner. The Technical Department of the paper contains a description and illustrations (with sections) of an immense modern "store," a kind of American Selfridge's, but with a very different architectural treatment.

The "Contemporary Review" contains an article by Mr. Wynford Dewhurst on "What is Impressionism?" which will be read with enthusiasm by those who have already run mad after the latest impressionism, and with laughter by those who have not. As a summary, we learn that an impressionist picture "is a cheerful optimistic picture, nobly up-lifting, good and healthy to live with. . . . indeed, so charming is it, that throughout a lifetime's association it retains its power of evoking pleasurable emotion." It is certainly amusing to read this and to think of the recent Grafton Gallery Chamber of Horrors. And before Manet and Monet, we suppose, there were no pictures that were uplifting to live with. Mr. Dewhurst considers that he has got Ruskin on the side of impressionism by a sentence to the effect that "a good artist habitually sees masses, not edges, and can in every case make his drawing more expressive by rapid shade than by contours." Did any one ever doubt it? That is one of those obvious truths in art which Ruskin thought he had discovered, whereas what he really did (which was no doubt a great benefit) was that he was the first to attempt to render them popular knowledge. But for one sentence in Ruskin which might seem to favour impressionism it would be easy to quote fifty which would be dead against it. The whole thing is one of the numerous crazes of the present day, which will have no lasting influence on sound and sane art.

The "Studio" appears to have been inviting a competition for designs for a village hall, and publishes some of the designs received (plans and perspective sketches). What strikes one in the designs is that all the competitors seem to have

been making designs for an ancient village instead of a modern one; high roofs and half-timber construction seem to be thought the necessary architectural ingredients of a village hall. High-pitched roofs are not the natural way of building now; they are only an affectation. Some of the plans are rather naive in their arrangements. "Lothian" shows "retiring-room—male" and "retiring room—female" ("gentlemen" and "ladies" is a pleasanter expression) accessible by doors opposite to each other out of the main hall, in full view of the audience; "Dannwin" the same. There should always be a separate entrance managed for those who are to be performers, instead of requiring them to come through the audience. And "Thatch" seems to think that one dressing-room will do for ladies and gentlemen.

It is of some interest to note that the "Gazette des Beaux-Arts" has an article on our great and sadly neglected English genius, Flaxman, by Mdlle. (or Mdme.) Jeanne Doin. The article, if not exactly enthusiastic, is highly appreciative, and what criticism there is is reasonable and not uncalled for. It is true that Flaxman's exceedingly methodistic turn of mind prevented him from altogether realising either the Pagan or the mediæval spirit of life. One may recall the story of Fuseli, when "keeper" of the Royal Academy, quitting a dinner party with the words "Farewell, friends! Farewell, wine! Farewell, wit! I must go and preside at sermon, the first from the Rev. John Flaxman." But Mdlle. Doin does full justice to the serene beauty and individuality of Flaxman's outline designs to Homer and Dante, of which several reproductions are given.

In Scribner, "The Field of Art" is occupied by illustrations and a description of the monument at Washington to General Grant—a thing on a scale that might have better suited a monument to Napoleon. There is a long platform with steps along one side; an equestrian statue of Grant across the centre axis, four lions on pedestals surrounding it, and at the far ends an artillery wagon and a cavalry group respectively. The equestrian statue is fine in pose; the sculptor is Mr. Merwin Shrady. Another article gives a description and illustrations of "The Hall of Panels" in the house of Sir L. Alma-Tadema; apparently there are a number of long, narrow upright panels each painted with a subject by a well-known artist; illustrations of all are given. This will interest many English as well as American readers.

The "Century" contains a well-illustrated article on Carcassonne. There is also an article called "A New Motive in Decoration," though there seems to be nothing new about it except that the subject, "The Building of the House of Wisdom," may not have been used before; otherwise it is only one more piece of wall decoration carried out in a private house in Philadelphia. The artist is a lady, Miss Violet Oakley. A coloured view of one of the lunettes shows a very pleasing result.

Change of Address.

Mr. S. Douglas Topley, Architect and Surveyor, has moved his offices from Cheapside to Palace Chambers, Bridge Street, Westminster.

Institute of Sanitary Engineers.

After March 31st, Mr. Nandy Hoskins, M.S.E., M.R.San.I., F.I.S.E., will cease to act as honorary secretary to this Institute. He will continue to practise, however, from his offices at 120 and 122, Victoria Street, Westminster.

SOCIETIES' MEETINGS.

SHEFFIELD SOCIETY OF ARCHITECTS
AND SURVEYORS.

At the meeting of the Sheffield Society of Architects and Surveyors held on Mar. 9th, Mr. E. M. Gibbs, F.R.I.B.A. read a paper on "The Future Extension of the Suburbs of Sheffield," illustrated by some plans of a development scheme he had prepared, and which, he suggested, might be put forward as data for the preparation of a town-planning scheme for submission to the Local Government Board. His scheme is not for the improvement of the old parts of the city, which cannot be dealt with under the Act, but only for the immediate and effective control of the extensions to suburbs, to prevent them being injured more than is necessary.

The deplorable way in which Sheffield had been and was being extended, said Mr. Gibbs, was generally admitted. Houses were now being erected at the rate of 30 to 40 to an acre, with the smallest or gardens and forecourts, or none at all, and this in suburbs where there was plenty of land close at hand still let for agricultural purposes at £3 or less per acre. This was due largely to the apathy in the past of public opinion, which, however, had now unmistakably awakened, and demanded a remedy for the future. The City Council had recognised the demand by the appointment of a Town Planning Committee, who were having plans prepared for two of the suburbs where building operations were the most rapidly developing. But, while the Act was no doubt applicable to these two suburbs, it was almost equally applicable to others. "The scheme should be applied to all the suburbs and to the full area of each, so that there would be no intervening spaces in which advantage might be taken of the absence of restrictions. Also, as it is uncertain which of the suburbs are most likely to extend, it is desirable to protect the public by the inclusion of the whole. From considerations as to the future growth of the city, it is evidently desirable to include not only the whole of the suburbs, but the whole area within the city boundaries, in the town planning scheme, and this should apply to land now in course of development as well as land at present outside the developed parts."

Mr. Gibbs suggested the formation of a new road connecting the suburbs, and in-

corporating wooded ground as public parks. Starting at Owlerton, the first portion would be across the Valley of the Don and up the wooded valley of Old Park Wood, through Norwood to the bottom of Barnsley Road, to Brightside, Attercliffe Road, Broughton Lane, Darnall, Intake, Gleadless, Hemsworth, Woodseats, Millhouses, Bannerdale, Banner Cross, Nether Green, Sandygate, Hillsborough, and back to Owlerton; while part of an outer ring was suggested from Woodseats via Abbey Lane, Beauchief, Whirlow, Ringinlow, Redmires, and the new road through Wyming Brook to Hollow Meadows.

BIRMINGHAM ARCHITECTURAL
ASSOCIATION.

On March 10th Mr. Selwyn Image, Slade Professor of Oxford, was the guest of the members of the Birmingham Architectural Association. He came down to Birmingham "to address a few words to artists about the seriousness of their calling, and how to commend art to the community," and appealed to them all to do what they could in that direction. What, he asked, could artists do to encourage art as a living thing, as distinct from merely the connoisseurs' and collectors' business? Every one needed to take a very serious view of his own calling. With regard to pupils, or other young people over whom they had any power, the great thing was to exert a steady influence, and one very profitable way would be to get them as much as possible to fall back upon the English traditions of art, which were some of the very finest the world had seen.

INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting of the Institution of Civil Engineers on Tuesday, Mar. 14th, Mr. Philip Dawson, M.Inst.C.E., read a paper entitled "The Electrification of a Portion of the Suburban System of the L.B. and S.C. Railway," from which the following extracts are taken:—The selection of the single-phase system, said the speaker, was at the time very severely criticised by many engineers, and foredoomed to failure; but thirteen months' regular working has entirely justified its adoption. The distance between London Bridge and Victoria is 8.7 miles, and the trains accomplish the distance, including ten intermediate stops of 20 seconds each, in 24 minutes. The results obtained on the

South London line were so satisfactory that the Brighton Company decided to extend the system from Battersea to the Crystal Palace and Selhurst, and from Peckham Rye via Tulse Hill to the Crystal Palace, thus bringing the total length of route electrified to 23 miles, which is equivalent to 62 miles of single track. Difficulties have been experienced, particularly in America, with the overhead conductors; but owing to the flexibility of the design employed, no trouble has been found here, and the extensions are being constructed to exactly the same design as those originally got out for the South London line. Owing to the fact that at Victoria Station porters had to get on to the roofs of the carriages in order to light gas lamps, the height of the conductor is 20 feet in this station and at London Bridge; whereas, the normal working height is 16 feet, and the lowest position under certain low bridges is 13 feet 9 inches. Double-insulation is used throughout, and the only type of insulation employed is porcelain. The underframes of the coaches consist of plate-girders, and the carriages themselves are of a new type as regards this country, being fitted with side doors and having a passage-way between compartments.

LEEDS AND YORKSHIRE ARCHITECTURAL
SOCIETY.

At a general meeting of the Leeds and Yorkshire Architectural Society held on Thursday, March 9th, when Mr. Sydney D. Kitson, F.R.I.B.A. (president) occupied the chair, Mr. W. H. Ward, A.R.I.B.A., read a paper on "The Renaissance Church Architecture of the Sixteenth Century in France."

It was a commonplace, said Mr. Ward, that the history of architecture was in most countries and ages the history of religious architecture. In the Middle Ages if church architecture were eliminated nothing coherent, or very important, would be left. But at the time of the Renaissance, western Europe had largely outgrown the tutelage of the Church, the idea of nationality was developing, and in England, Spain and France the focus of national life was becoming a strong centralised monarchy.

The architectural expression of this state of affairs was to be found, therefore, in secular building, and more particularly in the dwellings of the Sovereign and his



THE ENGLISH BRIDGE, SHREWSBURY, WHICH IT HAS BEEN DECIDED TO WIDEN.

(See next page.)

Court. The architecture of France in the sixteenth century was essentially an architecture of châteaux, of the pleasure-houses of a still half-feudal aristocracy.

Thus it was much more difficult to present a picture of church architecture of this period than of contemporary secular architecture; and, excepting a short list of approximately complete buildings, a history of the style must be compiled chiefly from additions and embellishments to Gothic churches—here a chapel, there a transept, elsewhere a vault or a portal, a tomb, a screen, or a reredos.

St. Eustache, Paris, begun in 1532, was the largest and completest Renaissance church of the century in France; and although practically identical in plan with Notre Dame, it was designed as a whole from the first as a Renaissance building, its Gothic features being clothed with detail inspired from Italian sources.

The lecturer broadly analysed and compared the various parts of this church with contemporary examples elsewhere, and by means of a series of some sixty slides traced the gradual spread of Renaissance ideas—first in the detail and later in the general design—over the ecclesiastical architecture of France.

ABERDEEN SOCIETY OF ARCHITECTS

A meeting of the Aberdeen Society of Architects was held on March 7th, Mr. Arthur Clyne presiding. The annual report alluded, among other matters, to the terms of the School Board's re-appointment of their architect, and the Society's action in regard to it. The ground of the Society's objection was mainly the unfairness, as they considered it, to members of the profession in Aberdeen as a body in giving to any individual architect the monopoly of the Board's work, while extending to him also the privilege of engaging in general practice. The Board, however, declined to see the matter from the point of view of the Society, and the appointment was made on the terms originally proposed.

Mr. Rust gave an exhaustive account of his impressions of the Town Planning Conference, and of the garden cities he had visited near London. He did not see why such a town-planning exhibition should not be held in Aberdeen. Their citizens, he said, were under a deep debt of gratitude to the Aberdeen Land Association for the excellent manner in which they had developed the Rubislaw estate.

Mr. Clyne (who was re-elected president) shared the hopes that the town-planning exhibition might be brought to Aberdeen. It was now in Edinburgh, and there was no reason why it should not go to Aberdeen.

INSTITUTION OF MECHANICAL ENGINEERS.

In connection with his presidential address to the Institution of Mechanical Engineers last week, Mr. Edward B. Ellington showed a drawing of what he termed "possibly the oldest example of mechanical engineering work now extant." This drawing, prepared by Mr. James P. Maginnis, M.I.Mech.E., represented a bronze pump, in the British Museum, found at Bolsena, in Etruria, and attributed to Ctesibius, a barber of Alexandria, who lived in the third century B.C. He was probably a contemporary of Archimedes, the inventor of a screw for raising water. Curiously enough, said Mr. Ellington, a pump constructed on the same principle as Ctesibius's was unearthed a few years ago during the excavations at Silchester, the old Romano-Bri-

tish city situated not far from Reading. This pump, however, was a much cruder affair, made of wood and lead, but it undoubtedly was an effective force pump, and it suggested that such pumps were in considerable demand at the time of the Roman Empire.

GLASGOW INSTITUTE OF ARCHITECTS.

A special meeting of the Council of the Glasgow Institute of Architects was held on March 9th, when the following office-bearers were appointed:—President, Mr. John B. Wilson, F.R.I.B.A.; vice-presidents, Messrs. A. N. Paterson, M.A., F.R.I.B.A., J. K. Hunter, F.R.I.B.A., and R. D. Sandilands, F.R.I.B.A.; secretary and treasurer, Mr. C. J. MacLean, writer, 115, St. Vincent Street; auditor of professional accounts, Mr. George Bell, F.R.I.B.A.

COMPETITIONS.

Penrith Grammar School.

The third premiated design in this competition was the joint work of Mr. Claude Paterson, A.R.I.B.A., and Mr. J. Theo. Halliday, A.R.I.B.A., of Manchester (submitted under the title of Messrs. Halliday and Paterson), not the work of Mr. Halliday alone, as stated in the announcement of awards on p. 285 of our last issue.

New School Buildings, Walisend.

The Council of the Royal Institute of British Architects request Members and Licentiatees not to take part in the above competition.

Chilian National Monuments: International Competition.

The Government of the Republic of Chili are organising an international competition for several commemorative monuments. An independence monument is to take the form of a triumphal arch, in which various stages of the development of the Republic are to be symbolised in four groups in bronze. Ten thousand and five thousand dollars will be awarded respectively to the authors of the first and second premiated designs. Five other monuments will have for their respective subjects the statesmen Camille Henriquez and Zenteno, and the generals Joaquim Prieto, Manuel Bulnes, and Las Heras. For each of these monuments there will be a first prize of 2,000 dollars, and a second of 1,000 dollars. The limit of cost for the Independence monument is 20,000 dollars, and 60,000 dollars must cover the cost of the other five. September 1st, 1911, is the last day for receiving the designs.

LIST OF COMPETITIONS OPEN.

MARCH 21. ELEMENTARY SCHOOL, LUTON.—Luton Education Committee invite architects willing to compete in a limited competition for a new elementary school. Six architects will be chosen to compete, and those who are unsuccessful will receive an honorarium of £5 5s. each. Apply Secretary of Education, Town Hall, Luton.

MARCH 31. CHURCH, NEW CUMNOCK.—Particulars in our issue of March 7.

APRIL 1. MUNICIPAL OFFICES FOR COWENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 1. "OWEN JONES" COMPETITION FOR WALL-PAPER DESIGNS, etc. Designs to be submitted to the Board of Education

by April 1. The competition is open to students in schools of design. Six prizes are awarded by the Society of Arts, John Street, Adelphi.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

MAY 5. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250 for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea.

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURT OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

THE ENGLISH BRIDGE, SHREWSBURY.

The proposal to widen the English Bridge over the Severn at Shrewsbury was again revived at a recent special meeting of the Town Council. It was stated that the work would cost at least £6,000 to carry out if the beauty of the bridge was to be preserved, and the Deputy Mayor moved that a sum of fifty guineas be spent in preparing plans, costs, etc.—Dr. Cureton moved that the plans should include a girder bridge structure instead of the present one. There was too much sentiment, he said, about that bridge, and too little common sense.—Alderman Peele said he was perfectly shocked to hear councillors make a proposal to do away with their present beautiful bridge. If they did so Shrewsbury would not be worth living in, as they would be abused from one end of England to the other.—The amendment for a girder bridge was defeated, and the motion carried to prepare plans for widening the present structure.

The bridge consists of seven arches with rusticated voussoirs, with a cornice and balustrading and projecting piers between the arches. The centre of the bridge is marked by a small pediment, and each arch is accentuated by an ornamental keystone. It was built in 1774 from the design by John Gwynne, R.A., and is a fine specimen of eighteenth-century stone bridgework.

DETAILS—OLD AND NEW.

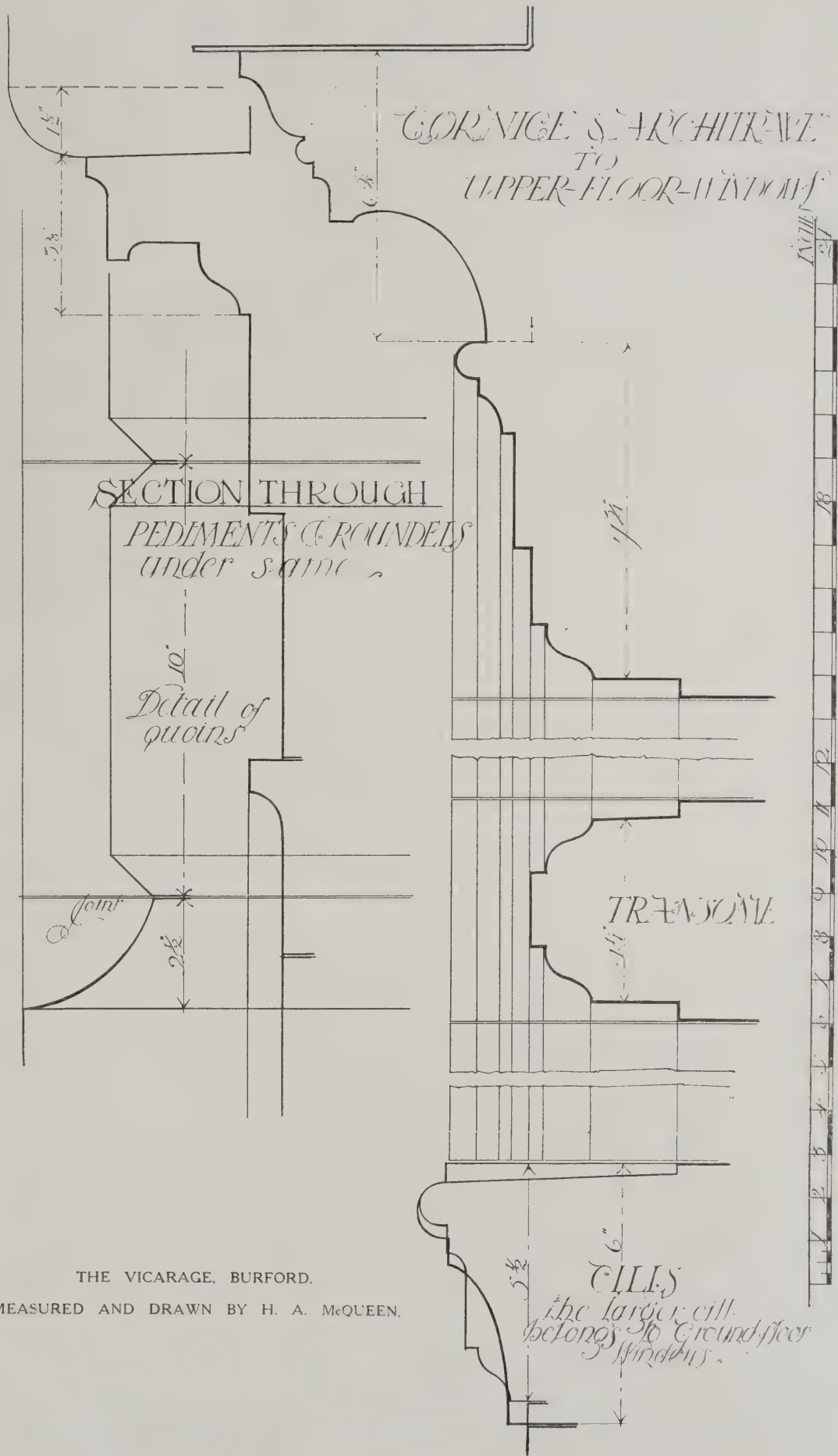
We publish in this issue the first of a new series of detail drawings, with photographs, which we think will be of much interest and value to our readers, more especially as it is our intention to include good examples of new work as well as fine examples of old.

With regard to the Vicarage of Burford, it may be noted that the date cut on the centre tympanum is 1672. The building is a delightful example of the Later English Renaissance carried out in a very unpretentious manner. It is built of closely fitting ashlar with joints rendered quite imperceptible by time. Mr. Gotch, in "The Growth of the English House," uses this building (considering that it is contemporary with Wren's mid-career) to show how architecture of that time pursued two several ways—"the stately, guided by great artists; the homely, guided by unknown artisans." He writes further: "The survival of old ways in remote places is well shown in the Vicarage at Burford. . . . Here there is no attempt at pronounced classic. The roof is gabled, it has no cornice of any account; the windows are mullioned, and the dormers retain some of the fantastic curls of the early years of the century. Nevertheless, in the plainness and precision of the whole treatment, in the flat shape of the mullions, and in the ovals of the dormers, the experienced eye can detect the march of Time."

It was found impossible to draw the stone joints of this simple front.



MEASURED AND DRAWN BY H. A. McQUEEN.



NEWS ITEMS.

Change of Partnership.

In notifying, on p. 281 of our issue for last week, the retirement of Mr. Rickman from the firm of Messrs. Rickman and Burr, surveyors, and the continuance of the firm under the style of E. J. Burr and Son, we gave the address as 5, Queen Street, instead of 5, Queen Square, Bloomsbury, W.C.

* * *

Surveyors' Golf Tournament.

The Chartered Surveyors' Golfing Society will hold a match play tournament between March 25 and July 31, the winner to hold for a year the challenge cup presented by the council of the Surveyors' Institution and to receive a memento presented by Mr. Leslie R. Vigers, President of the Society, and of the Surveyors' Institution.

* * *

Co-partnership Housing.

Viscount Howick has joined the Board of Co-partnership Tenants, Ltd., whose work as pioneers in housing reform has become so well known through the various tenant society estates at Hampstead and elsewhere. Other changes of the Board that mark the increase of its work are the inclusion of Mr. F. Litchfield among the directors; while Mr. George Morriss has left the Labour Co-partnership Association to become secretary in his place.

* * *

Bristol Royal Infirmary Extension.

On Tuesday last week Sir George White laid the foundation-stone of the new surgical wards which are being added to the Bristol Royal Infirmary as a memorial to King Edward. The architects are Messrs. H. Percy Adams and Charles Holden, of London, and the contractors Messrs. Cowlin and Son, of Bristol. The extension will provide accommodation for 180 additional beds, with three operating theatres. The cost of the work will be £70,000.

* * *

Liverpool Cathedral.

The second part of this great building scheme—namely, the choir and transepts—is to be ready for consecration in the spring of 1915. £43,000 is still required for this work, although £36,000 has already accrued as interest on the capital given to the fund. The work is rapidly progressing, more than 200 men being engaged on it. Mr. G. Gilbert Scott is the architect.

* * *

New Architect for Rochester Cathedral.

Mr. Temple Moore, F.R.I.B.A., of London, has been appointed by the Dean and Chapter architect to Rochester Cathedral. The restored north aisle of the Cathedral was dedicated recently by the Bishop of Rochester. The cost of the work has been defrayed by Mr. Thomas Hellyar Foord, of Botley Grange, Hampshire, a native of Rochester, whose gifts to the cathedral, including the restoration of the central tower and the restoration of the chapter library, have amounted to £8,000.

* * *

New Pavilion and Winter Gardens for Margate.

On what used to be known as Fort Green at Margate work is now in progress for the erection of a new pavilion and winter gardens, to be ready in July next. The undertaking will, with the undercliff promenade, cost from £30,000 to £35,000. The Fort Pavilion will be a unique structure. The old Fort has been excavated

from the top of the cliff to sea level in the shape of a horseshoe 360ft. long and 180ft. wide. Rising from the sea wall will be the pavilion, with frontage of 116ft. It will comprise a concert-room capable of seating 2,500 persons, an open-air arena with a capacity of 1,200, and a covered colonnaded promenade with balconies overlooking the sea and the gardens, and sunk lawns and grounds giving complete shelter from the winds. The concert-hall is to be 140ft. long and 95ft. wide.

* * *

Two Burne-Jones Drawings for Stained-glass Windows.

The two huge pastel drawings by Sir Edward Burne-Jones of "The Nativity" and "The Crucifixion," which were at Christie's recently, have been transferred to the Victoria and Albert Museum by Sir Philip Burne-Jones. They each measure about 19 ft. by 7½ ft., and were the designs for the stained-glass windows in St. Philip's Church, Birmingham.

* * *

Widening of Leadenhall Street.

From the proposals of the City Corporation it appears that the long-delayed widening of Leadenhall Street will most probably be carried out shortly. The widening of the south side of the street to 50ft. was commenced in 1860, and it is now proposed to continue this work, at an estimated cost of £252,800. The scheme would mainly consist of setting back fourteen houses, Nos. 57 to 69.

* * *

Welsh National Library.

The contract for the first section of the Welsh National Library, the foundation-stone of which will be laid by the King in July next, has been let. Ten tenders were received, and the lowest, that of Messrs. H. Willcocks and Co., Wolverhampton, at £50,000, was accepted. Messrs. Willcocks were the contractors for the Edward Davies Memorial Laboratory at Aberystwyth. The total cost of the completed library building is estimated at considerably over £100,000. Mr. Sydney K. Green-slade, F.R.I.B.A., is the architect.

* * *

A Great New Road between Wolverhampton and Birmingham.

It was announced at last week's meeting of the Staffordshire County Council that the Road Board, which derives its funds from the petrol tax and motor licences, had offered £30,000 towards the cost, estimated at £100,000, of the proposed new road between Wolverhampton and Birmingham, passing through the Black Country. Sir Reginald Hardy, Chairman of the Main Roads Committee, said it was proposed to construct a magnificent boulevard, with a fence, trees, and side-tracks for fast and slow traffic. The expenditure by the Council would, it was anticipated, be recouped by the increased assessable value of the building-line on either side of the road.

* * *

A Memorial Column by Mr. Lutyens.

At a meeting of the Attractions Committee at Bath last week, a scheme submitted by Mr. E. L. Lutyens, F.R.I.B.A., for the King Edward Memorial was considered. The Memorial Committee had decided, on the recommendation of the President of the Royal Institute of British Architects, to consult Mr. Lutyens as to the suitability of some site adjacent to the Institution Gardens, and as to the particular form the memorial should take. We understand

that Mr. Lutyens suggests a column, about 80 ft. high. His scheme also provides a considerable improvement in the widening of the roadway on the east side of the Orange Grove, with a very broad pavement encroaching somewhat upon the new portion of the Institution Gardens, where the memorial column would stand.

CORRESPONDENCE.

"Design for a Tall Chimney Shaft."

With reference to the illustrations, on p. 250 of the Journal for March 8th, of a design for a tall chimney-shaft, a firm of steeplejacks and builders of tall chimneys write to the effect that the bonding shown should not be recommended for tall chimney building; and they express the opinion that this class of work should only be undertaken by specialists.

The R.I.B.A. Licentiate'ship.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your journal and the other professional journals are an educational force, and the Royal Institute of British Architects has set up for an educational and examining force; therefore, its policy should be consistent, or, surely, you will assist in criticising that policy.

Is it consistent to get a lot of men to work up for the examinations of the R.I.B.A., and then quietly open the back door for Licentiates not only to become Licentiates, but very easily, as one can see, Fellows? The result is that numbers of young men who have neglected the examinations are now crowding in as Licentiates.

HARD WORKER, A.R.I.B.A.

London, E.C.

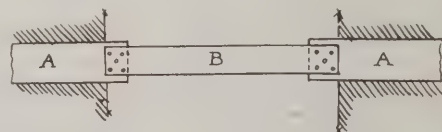
Stresses in Angle-Cleat Rivets.

[See Journal, Feb. 1st, p. 123; Feb. 22nd, p. 193; and March 8th, p. 246.]

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to my letter on "Stresses in Angle-cleat Rivets," p. 193, February 22nd, it does not appear that my contention as to the stress on the rivets has been quite clear.

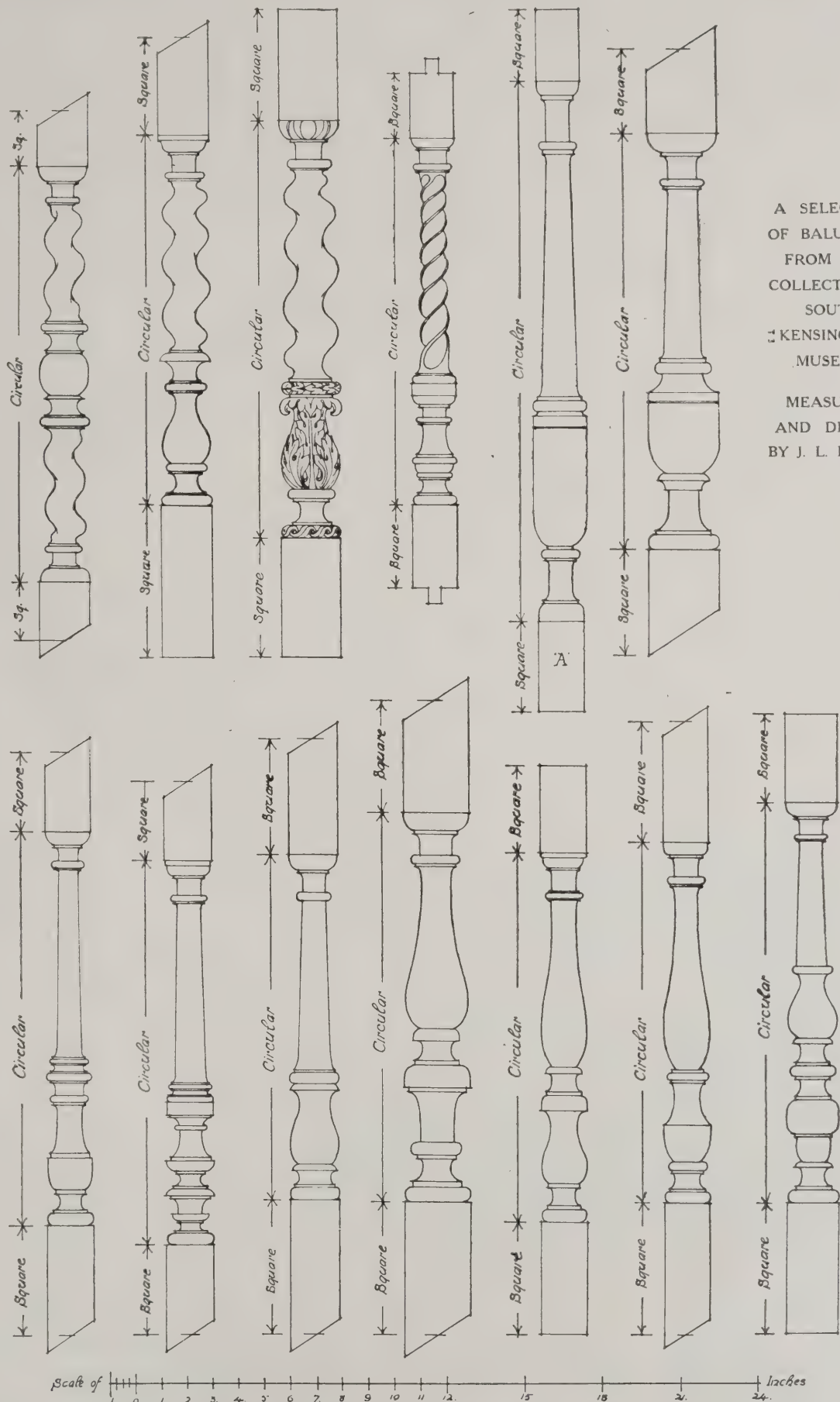
The following sketch, I think, will possibly better show what I mean:—



Let A A be two plates rigidly fixed, and let B, acting as a beam, be another plate secured to plates A by rivets. It is evident that under these conditions there will be no turning moment on the rivets due to any load carried by B, other than that due to any deflection of B. From this it appears that unless plate A can bend at the section X—X, there can be no turning moment on the rivets; or, in the case where plate A is a cleat, if the connection up the flange is strong enough to hold the load as shown in my previous letter.

There seems to have been some misunderstanding with regard to the one rivet mentioned in my previous letter. My idea was to show that if the joint would hold with one rivet, there could be no turning moment, and then that if under the same conditions any number of rivets were substituted for the one, there would still be no turning moment.

R. GILLETT.



A SELECTION
OF BALUSTERS
FROM THE
COLLECTION IN
SOUTH
KENSINGTON
MUSEUM.

MEASURED
AND DRAWN
BY J. L. BERRY.

These balusters, with the exception of the one marked A (which is Flemish), are eighteenth-century English work, and are principally in pine wood.

THE LEGAL AUTHORITY OF THE ARCHITECT.

BY A. MONTEFIORE BRICE.

In his paper on the above subject, which was read before the Architectural Association on March 20th, Mr. A. Montefiore Brice, of the Middle Temple and the Oxford Circuit, Barrister-at-Law, dealt with cases where the authority of the architect was implied rather than expressed.

SPEAKING generally, an architect may be employed merely as an adviser, or as a designer or draughtsman, or as an agent for the building owner. Usually, of course, he is called upon to discharge all these functions together.

As adviser he holds himself out as possessing the necessary knowledge and skill, and as willing to exercise all reasonable care in giving such advice. No authority is delegated to him by the building owner, because there is none to exercise in this simple relation.

As designer or draughtsman he contracts to supply drawings and a specification executed with reasonable care and skill, and that these shall be capable of being carried out. He warrants no special degree of skill, and the test as to whether he displays enough is whether the skill is so deficient or the case so defective that a bad result becomes inevitable. Again no authority is delegated to him by the building owner, because there is none to exercise in this relation.

But when he adds to these the function of supervision of the works upon which he has advised, or which he has planned, or, less often, when he undertakes to supervise the erection of what others have planned, he becomes the agent of the building owner, invested with certain authority over others, and expressly liable to his employer and to third parties for his use of it.

Terms of Appointment.

An architect may be appointed and invested with the full authority of the terms of his appointment by mere word of mouth, or his appointment may be inferred from the conduct of his apparent principal, or from the ordinary course of dealing, or, as is obvious, it may be shown by a written contract. In practice appointment by written contract is the usual manner, but in law it is only necessary in two cases to make such appointment in writing. In the first case, if the work is not to be performed within the year, or is incapable of being completely performed within the year, then, in order to satisfy the Statute of Frauds, the appointment must be in writing. In the second case, seeing that a corporation aggregate can in general only act by deed, its agent must be appointed by deed. There are exceptions to this second rule, and for certain trifling agencies a corporation can act without deed, while a trading company, though it be a corporation aggregate, can generally act without a deed.

The authority of an architect flows from the terms of his employment as the agent of his employer, and in practice is generally limited (so far, at least, as the relations between the building owner and the builder are concerned) by the terms of the building contract. On the other hand, it frequently happens that where the work is on a small scale, or of an intermittent character, the building owner does not enter into a formal agreement expressing the conditions upon which he delegates his own authority to the architect, and in such cases the limits of that authority must be sought elsewhere than in a formal contract.

The Law of Agency.

The general principles of the law of agency as affecting the authority of the architect are equally applicable whether the appointment is made in writing or otherwise, but in both cases they may be excluded by an express, or what in point of law may be held to amount to an express, provision to the contrary. Failing such express provision, it is clear that the architect's authority (as between his employer and third parties) is to be measured by the extent of his usual employment—a standard which, though it might be readily ascertained in practice, is not unlikely to invite litigation.

Where the architect is the agent of his employer, authorised to act in the name of that employer, he may be the general agent of his employer, and his authority may be restricted within narrower limits. If he be the general agent to the extent of the usual employment of an architect, then he possesses the full apparent authority due to his position, and his employer is bound by all acts of the architect which come within that authority. And whether the terms of the agreement are merely general, or are in part or wholly inconclusive as to the nature of the authority imposed, the architect would be justified in adopting the ordinary and reasonable practice of his profession, and in doing so would be held to be complying with the requirements of the law.

On the other hand, where the authority of the architect is defined by express terms, which may be oral, but are usually in writing, such limitation must be strictly observed. Any infringement of such authority by the architect would release the employer from liability, and render the architect himself liable in damages to injured parties. But the infringement must be material, for the law holds that in the construction of such authority there is present an implied permission to the agent to use the means that are necessary to carry into effect the expressed purpose of the employer.

Thus, in Evans on "Principal and Agent" (2nd edition, p. 178) it is pointed out that when authority is conferred upon an agent by a formal instrument there are two rules of construction to be carefully observed:—

(1) The meaning of general words in the instrument will be restricted by the context, and construed accordingly.

(2) The authority will be construed strictly so as to exclude the exercise of any power which is not warranted either by actual terms used, or as a necessary means of exercising the authority with effect.

Principal and Agent.

A good illustration of this doctrine is afforded by the leading case of *Sharpe v. San Paulo Railway* (1873, L. R. 8 Ch., 597), where it was held, *inter alia*, that the contractors could not on mere verbal promises by the company's engineer (which were unauthorised) maintain against the company a claim to be paid sums beyond the sums specified in the contract, even though the amount of work to

be executed might have been underestimated by the company's engineer; and that as the contract had provided that the certificate of the engineer had been made a condition precedent to payment, such certificate must be held conclusive between the parties in the absence of fraud.

The authority of the architect, whether general or limited, usually extends to his doing all acts required in the process of obtaining tenders and making drawings for and supervising the erection of or addition to the building, for the purpose of which he has been employed. Thus, in *Kimberley v. Dick* (1871, L. R. 13 Eq. 1), Lord Romilly, M.R., said that he must treat the architect as the agent of his employer, "generally, for all purposes connected with this building, and that without any limitation as to price or anything else." Again, Lord Coleridge pointed out in *Laidlow v. Hastings Pier Company* (Jenkins and Raymond, 4th edition, p. 238) that the engineer, from the beginning to the end of the deed, "out of the four corners of which his position is to be collected," was agent to his employers, but as their agent "clothed with peculiar functions exercisable only as provided for by the deed." Where, consequently, an architect allowed the projecting timbers of the adjoining owner to be built into the wall of his employer, it was held that he had exceeded the nature of his employment, and that the act was not within his authority (*Betts v. Pickford's* (1906), 75 L. J. Ch. 483).

Again, if an architect be employed merely to make drawings, he is acting as an independent contractor, a skilled draughtsman, or professional man, and, as no question of agency arises, no question of authority can follow. But if he is making drawings for delivery to the builder, a question of authority can enter as to the warranty that they are correct or that the builder can work to them. But no such warranty can be implied. An illustration of this is to be found in *Thorn v. London Corporation* (1876, 1 App. Cas. 120), where the House of Lords held that where plans and a specification for the execution of a certain work are prepared for the use of those who are asked to tender for its execution, the person asking for the tenders does not enter into any implied warranty that the work can be successfully executed according to such plans and specification. No such warranty would appear in any properly drafted building contract, and if the architect should be so foolish as to warrant such accuracy or possibility to the builder it is he and not the building owner who would be liable to the builder, for it is the architect who has exceeded his express authority.

The Written Contract.

Where the duty and authority of the architect are set out in a written contract there should, as a rule, be little difficulty in ascertaining the extent and limitation of both duty and authority. But all building contracts (in which the provisions for the architect's powers are usually embedded) are not perfect specimens of draughtsmanship, and it is when they become ambiguous, inconclusive, or defective that questions for consideration and settlement arise. It is in such cases that it becomes of the highest importance to know what the implied as opposed to the express authority of the architect may be, and to apply to the omissions or the ambiguities the general principles of the law of agency as modified by the practice of the profession, and as limited by the context of the contract in question.

For example, when the architect has power to order extras he has not, in consequence, the implied authority to order as extras the execution of omissions on his drawings (*Sharpe v. San Paulo Railway, supra*). Nor when his drawings are not practicable has he any implied authority to order as extras work to be done that will render them practicable. Thus, in *Tharsis Sulphur and Copper Company v. M'Elroy and Sons and others* (1878, 3 App. Cas., part 2, p. 1040), where there was a contract for construction for a lump sum, and a clause that no extras should be done without a written order from the employers' engineer, it was held that the certificates of the engineer, though they referred to work done of a more expensive character than that specified for, were not to be regarded as written orders, and that the claim of the contractors was excluded by the contract.

No implied authority rests with the architect either to obtain tenders or to enter into contracts with a builder. Neither is he authorised to negotiate for advances or undertake any preliminary work of this character without an express authority from the owner. If, on the other hand, he has such express authority, he can bind the owner for any reasonable expenses to which he may have been put in the course of conducting such preliminary work.

Though an architect has authority to make drawings for the purpose of the works, he has no implied authority to make such changes in those drawings as would destroy the original scheme. But he has an implied authority to supply drawings of details not shown in the original plan.

Authority for Quantities.

So, too, it has been held that an architect has, when authorised to obtain tenders, an implied authority to engage the services of a quantity surveyor to supply quantities, although it is doubtful whether such architect has any implied authority to take out those quantities himself. But the quantities must comply with the limitations of the architect's authority, and if he be authorised only to obtain tenders not exceeding a certain amount, then he can only have the implied authority to obtain quantities within that amount. But where, as in *Evans v. Carte* ("Times," May 5, 1881), the quantity surveyor brought an action against the building owner for fees for reducing the quantities upon drawings of the architect, which proved too expensive when the tenders came in, and the building owner authorised the architect to reduce the quantities in order to reduce the cost of the building, it was held that the quantity surveyors were entitled to sue the building owner for the cost of such reduction of quantities. And even if the building owner has not originally given the architect authority to reduce the estimates and quantities, but becomes aware of the fact and approves expressly or impliedly, the architect's authority would be confirmed, for, as Lord Coleridge said in the case just cited, "ratification or tacit assent would be equivalent to precedent authority."

In the absence of a limit of price in the contract, the architect has an implied authority to order works for which the builder may recover the price, even though, as a fact, the employer has privately given such limit of price to the architect. As long as the authority can be properly implied, the builder can maintain his claim against the building owner, and it is for the latter to recover damages from the architect for exceeding his authority.

The architect has not an implied authority to dismiss a builder, and consequently any authority so to dismiss must

be expressed, and is usually put into the contract. If put into the contract it must be specific and not general in its application, for it has been held that where there is a clause enabling the architect, should he deem proper, with the written authority of the building owner, to dismiss the builder, the written authority of the building owner must not be in general terms, but must indicate a particular person.

Architect and Sub-contractor.

An architect has no implied authority to bind his employer for the expense consequent upon sub-contractors of the contractor carrying out the orders of the architect, whether by way of original work or of deviations. Nor has he an implied authority to incur on behalf of his employer any liability to specialists unless such specialists can be shown by the terms of the contract to be employed by the building owner. If such specialists are, in fact, the sub-contractors of the principal contractor, then no certificate of the architect can entitle them to claim payment from the building owner; nor can the contractor claim damages from the building owner in respect of any delay caused by such specialists (*Leslie v. Metropolitan Asylums Board* (1901, 68 J.P. 86).

The architect has no implied authority to vary the building contract. His authority, on the contrary, directs him to see that its express terms are carried out. But it is always possible for the parties to the contract to vary it by consent, and to empower the architect to authorise such variations. Where he is empowered to give directions, such directions must be within the expressed limits of the contract (*Sharpe v. San Paulo Railway, supra*).

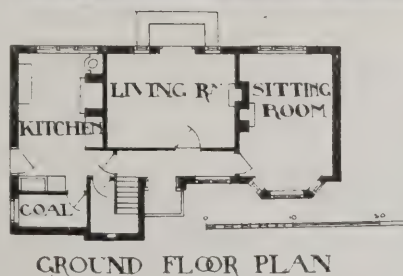
Similarly, an architect has not the power, unless expressly given, to represent that

the building owner has varied certain conditions—often such conditions as deal with waiver. The contract, when reduced to writing, remains the final agreement of the contracting parties, and no unauthorised representation of the architect can reduce the liability of the builder or impose one on the building owner. On the other hand, should the architect make representations, before the builder has entered into the contract, as to the character of the work he will require, he would be authorised to act subsequently upon such representations, and they would not be held to be varying the terms of the contract unless those terms were inconsistent with the representations. But the making of such representations is loose and ill-advised, and leans to litigation.

An architect has no implied authority to give verbal orders when the contract provides for orders in writing, nor can he dispense with estimates in writing when such are required. But this does not prevent the architect from giving verbal orders or receiving verbal estimates conditionally upon their being reduced into writing before they are to become binding.

The Question of Extras.

As to extras, the architect has no implied authority to vary the conditions which the terms of the contract impose in respect of these items. Nor has he authority to regard as extras such items as are absolutely necessary to complete the contract. The architect will often certify as extras certain works which are not shown on his drawings or mentioned in the specification, or, at least, in the quantities. He has no authority to do so if such details, though not included in the contract by name, are necessarily part of the work. It is the duty of the builder to see whether every-



FIRST FLOOR PLAN

GROUND FLOOR PLAN

This house cost £315, including drains and water supply, and could be built cheaper in a district where the cost of bricks is less (at Farnham the cost is 3s. to 34s. per 1,000).

HOUSE AT FARNHAM, SURREY. HAROLD FALKNER, ARCHITECT.

thing is mentioned in the specification necessary to the completion of a given work, and to allow for such things as may not be described in the specification or shown on the drawings. *Thorn v. London Corporation* (*supra*) clearly laid down that the onus rests on the builder if he tenders on specifications and drawings which are inadequate or not practicable. He must not rely on such drawings or specifications; as Lord Chelmsford said, in the case just cited, "It is an usage of blind confidence of the most unreasonable description." This being so, it is not within the limits of the architect's authority to certify for such extra work which such "blind confidence" might consider extras to the contract. Whether certain work is an extra or is included in the contract may be a question of construction, and demand legal consideration, but it is often within the implied authority of the architect to decide what are extras. Such a power would arise when the contract allows him to decide the construction of the contract: it would also be present if he were empowered to value extras, and were not required to demand or were permitted to waive written orders for extras. This would apply to extras within the contract. But if the extras were so outside the contract that they might be regarded as severed from it, and from any restriction contained in it, it would naturally follow that all the conditions affecting written orders, valuations, and certificates by the architect would thereupon cease to apply, and that the claim by the builder in respect of such extras as these would be found on the basis of a *quantum meruit*, and not upon the contract as controlled by the authority of the architect, whether express or implied.

To put it summarily, an architect has no implied authority to order or contract for extras, and if he abuses his powers in this respect under the contract the builder, who is privy to the contract and yet acts on these unauthorised orders, cannot recover from the building owner (see *Cooper v. Langdon* (1841), 9 M. and W. 60).

"Progress" Certificates.

Similarly, there is no implied authority on the part of the architect to bind the building owner by his progress certificates, unless such certificates conform to the terms of the contract. But if the architect is authorised by the terms of the contract to make a valuation which shall be binding upon both parties to the contract, then he would have an implied authority to issue certificates not so conforming.

The authority of the architect when granting a certificate in his capacity as the agent of the building owner is comprised within the range of such certificates as may be merely ministerial—that is, which do not call upon him for a final opinion dependent on the exercise of judgment and professional skill. In certifying that certain materials have been supplied, that a given amount of work has been done, that something agreed to be delivered has been delivered, that something which the architect had power under the contract to order has been ordered by him and supplied, that the times agreed upon for performance have been complied with—in short, while issuing non-conclusive interim or "progress" certificates—the architect is ordinarily discharging the ministerial duty which he is authorised as agent for the building owner (see *Tindal, C.J.*, in *Morgan v. Birnie* (1833, 9 Bing. 672), and so long as he exercises all proper care, displays all reasonable skill,

and acts honestly and bona-fide, and within the scope of the authority conferred on him by the contract or otherwise, he discharges his liability to the building owner.—Acting in such a manner, he is under no liability to the builder, between whom and him there is no privity of contract. But as soon as his authority is extended to enable him to determine, or assess finally and conclusively, some question of fact between the parties, he ceases to be the agent of the building owner *ad hoc*, and becomes a quasi-arbitrator between the two parties. His authority extends to, nay, it compels, an impartial discharge of this supplementary power, for, as *Collins, M.R.*, observed in *Chambers v. Goldthorpe* (1901, 1 Q. B. 641), he is "clothed with the duty of exercising an impartial judgment." All that is needed to make such judgment binding are the facts that he is not disqualified by some circumstance to act judicially, that he is the person designated by the contract to give the certificate (when the certificate of more than one architect is required a certificate by one will not suffice, see *Lamprell v. Billericay Union* (1849), 3 Ex. 282, 18 L. T. Ex. 282), that he has received authority to certify regarding the subject matter of his certificate, that the power is still in existence, and that the certificate is shown by the contract to be intended to be binding on both parties (*Robins v. Goddard* (1905), 1 K. B. D. 294).

Professional Discrimination.

So, too, a contract will frequently leave many matters to the decision of the architect for the exercise of his professional judgment and skill, not as an arbitrator, who hears and weighs evidence, but as a person on whose special knowledge and capacity both parties rely. In such a case, the authority exercised in individual instances is an implied authority, which depends for its validity upon the fact that it is applied to cases which come within the clause of the contract. For example, where in *Roberts v. Bury Commissioners* (1871, L. R., 5 C. P. 310) the architect had decided that the builder had not exercised due diligence, and the building owner, in consequence, dismissed the builder and determined the contract under the conditions, it was held that the building owner was not entitled to do so, as the contract had not made the architect conclusive judge as to the due diligence. And where the architect's certificate or decision is declared to be conclusive concerning anything in connection with the contract, there is yet no implied authority by which the architect can bind the builder as to the compensation payable by the building owner in respect of his breach of the contract.

Where the architect exceeds his authority, and the builder, nevertheless, complies with his unauthorised instructions, the building owner can repudiate any claim the builder may make in respect of work done in these circumstances, unless, either expressly or impliedly, he has adopted or ratified such unauthorised instructions; and the only measure of relief then open to the builder is a claim by him against the architect for damages for breach of warranty of authority. One of the principles of the law of agency is that a person, whether acting in good faith or not, who represents to a third party that he is the agent of another when he has no such authority, or represents, when authorised to act as such agent, that his authority is other than it is, warrants such authority, either expressly or impliedly, to that third party, and, since his represen-

tation is untrue, is committing a breach of such warranty of authority. For such breach, or for the alternative claim, where a builder would bring an action for damages for deceit founded upon a fraudulent assertion of authority, the measure of damages would be about the same, for the measure would be in almost every case the amount which the builder has lost through acting on the faith of the architect's warranty, together with such profit as would have been made, and such expenses as he may have been put to by any action of the building owner in regard to the work done in accordance with the architect's warranty.

Unauthorised Intervention.

For example, where an architect who was employed to superintend the building of a church falsely represented that he was authorised by the building owners (a committee) to order stone from a certain firm for the building of the church, and the firm, relying on the representation and believing that the architect had authority from the building owners to order the stone on their account, delivered it, and it was used in the building of the church, and subsequently failed in its action against the building owners and had to pay the costs of the successful defendant in addition to their own, it was held that the stone merchants were entitled to recover from the architect not only the value of the stone, but also the costs they had incurred and paid in the action against the building owner (*Randell v. Trimen* (1856), 18 C. B. 786). This was an action for deceit, but an action for breach of warranty would lie, and similar damages would be awarded, even though the architect had the bona-fide belief that the authority he warranted was vested in him.

On the other hand, if the builder has notice of the architect's want of authority, then his right of action against both the building owner and the architect disappears. And, at this date, when building contracts are not only almost universally used, but largely become in course of time of a stereotyped character and singularly complete, it has become increasingly difficult for a builder to say that he has had no notice of what the building owner will be responsible for, and no notice of the extent and the limitations of the architect's authority.

Before closing this paper a few words should be added with respect to the architect's capacity to delegate his authority. The old maxims—"Delegata potestas non potest delegari" and "Delegatus non potest delegare"—apply to architects as to others, but it is settled law that in certain circumstances the delegate may employ subordinates to carry out the details of his work. In *Hemming v. Hale* (1859, 7 C. B., N. S. S. 487), *Williams J.* held that, "Where a man employs an agent, relying upon his peculiar aptitude for the work entrusted to him, it is not competent to that person to delegate the trust to another, but, where the act to be done is of such a nature that it is perfectly indifferent whether it is done by A or B, and the person originally entrusted remains liable to the principal by whomsoever the thing may be done, the maxim, 'Delegata potestas non potest delegari,' does not apply." And in a much more recent case, that of *Graham v. The Commissioners of Works* ("Builder," November 15, 1902, p. 456), it was similarly held by the Court of Appeal in circumstances thus described by the Master of the Rolls:—"By the terms of the contract the architect could order the removal of any materials used in the building that

appeared to him not up to the specified quality. What the architect actually did was to examine the wood on the ground, and, finding that it was not of the required quality, he directed the clerk of the works to mark the timbers already put in the roof of the sorting house to which he objected. Upon that gentleman's report, the architect framed his certificate, and the question was whether in these circumstances the architect could be said to have adjudicated on the matter. It was perfectly obvious as a matter of business that one could not expect an architect to go into every detail himself, and he (the Master of the Rolls) had no hesitation in holding on the authorities that the architect, having himself first ascertained that the timber being used was not of the stipulated quality, was perfectly entitled to delegate the duty of particularising which of the timbers had to be removed." And the Lords Justices concurred in this judgment.

General Conclusions.

But the architect is not entitled to put unreasonable confidence in any person to whom he may delegate his authority, even though that person may be employed by the building owner; and he would be liable in damages to the building owner if, by reason of such unreasonable confidence, he should certify for work which is inferior to the quality required by the contract. For example, where a building owner employed an architect to superintend the rebuilding of a house after a fire, and also appointed and employed the clerk of the works, and the architect, accepting the view of the clerk of the works that certain timbers did not require replacing without himself inspecting such timbers, passed those timbers, it was held by Cave J. that the question whether new timbers were required or not was one for the architect and not for the clerk of works, and that if the architect adopted the view of the clerk of the works without himself inspecting the timbers the responsibility of doing so attached to the architect, who became, in consequence, liable in damages to the building owner (*Lee v. Bateman* (Lord) 1893, "Times," October 31).

To put it briefly, although the architect may delegate certain duties of a more or less ministerial character, he must not abdicate his position or lay down his responsibility as the authorised agent of the building owner.

New York's New G.P.O.

The contract was awarded last week for the erection of the new General Post Office for New York. The building when completed will have cost £500,000, and will have the distinction of being the largest Government office.

The Ecclesiastical Commissioners.

The sixty-third report of the Ecclesiastical Commissioners for England on the proceedings for the year ended October last states that the net rental of estates produced £1,432,100, dividends and interest £435,600, these amounts, together with the balance brought forward, viz., £499,900, making up a total of £2,367,600. Of this amount the payments to benefices, bishops, chapters, and other charges, including expenses of management and income tax, absorbed £1,259,800; £401,200 was appropriated as capital for the further endowment of benefices; £80,000 was transferred to the minerals depreciation fund; £292,900 was applied to writing down securities, and the balance—£333,700—was carried forward to the new account.

ENQUIRIES ANSWERED.

Sub-Contractors and Bill of Variations.

X. writes: "When a contractor lets part of a contract to a sub-contractor at schedule prices in a bill of quantities, is he bound (or is it only an act of courtesy) to give the sub-contractor a copy of the surveyor's valuation of extras and omissions?"

The adjustment of any questions of omission or additions which may arise between the contractor and the sub-contractor must be either regulated by the terms of the agreement made at the time the sub-contract was accepted, by subsequent mutual agreement, or by customary practice. In the absence of specific agreement to provide the sub-contractor with a copy of the surveyor's valuation of extras and omissions, it is only an act of courtesy on the part of the contractor to do so.—

A. G. W.

Wanted a Heat-proof Floor.

Under the above heading we published in our last issue an enquiry from a correspondent inviting suggestions for a heat-proof floor between a bakery and a public hall. Correspondence has been received as follows:—

The Kleine Patent Fire-Resisting Flooring Syndicate, Limited, of 133 to 136, High Holborn, London, W.C., writes: "We would undertake to construct such a floor, with a guarantee that the temperature in the institution room is not affected by the heat of the bakery below. Similar work has been carried out by us over the heating room of a Turkish bath, and also over a boiler room heated to a great temperature."

Another correspondent writes: "Thermos' might employ Jones's patent slag wool and plaster slabs, as used for purpose of thermal non-conduction over the boiler room and under the King's Hall of Holborn Restaurant."

Young Architect and Lic. R.I.B.A.

"IN DOUBT" writes: "Please advise in the following case: A young practising architect in a year or two becomes a fellow of his local institute, which is affiliated to the R.I.B.A. Not being exactly the age required for entering the L.R.I.B.A. class, when this comes about, does he become eligible for election to the Licentiate class?"

—The Council of the Royal Institute have no power to make any exception in the matter of the age limit for Licentiates. Only a change in the Charter would enable them to elect Licentiates under the age of 30.

Liability for Private Street Improvements.

G. writes: "Owners of land edged heavily in black have received notice from the U.D.C., under the Public Health Act, 1875, Section 150, to construct a macadamised road half the width of the intended street, with a footpath alongside the wall from A B to C, and the owners

of the grounds have written to the Council to repudiate liability for the paving in question from B to C. The grounds and mansion were purchased over 12 years ago, and the mansion was converted into an hotel, and it is not intended to lay out the grounds into building sites. From B to C there was a footpath or ancient public right-of-way, with a stile at each end, and alongside this footpath was a farm road with a gate also at each end with open field beyond. The land from B to C and northward was purchased some years ago by a speculative builder, and laid out as a building estate, and for this purpose a 40ft. street was formed alongside the hotel boundary, tramways being constructed by the tramway company, from whom the builder receives a yearly rental. The U.D.C. are now about to construct and pave the roadway properly, and to form a cement or flagged footpath, and they call upon the hotel company to pay a proportion of the cost. The hotel company some ten years ago broke a doorway through the wall, where indicated, forming access to the ancient footpath, which has been maintained by the U.D.C. The Council threaten that if the company succeed in their objection they will not allow them to break out and construct any further entrances in the boundary wall to the hotel grounds. (1) Is the hotel company legally liable to bear the cost of the paving from B to C, seeing that the road is not being made for their benefit, but rather for the benefit of the adjoining estate owner, and that the footpath alongside the wall is an ancient right of way? (2) Have the U.D.C. power to prevent the hotel company from making access to their grounds from the ancient footpath?"

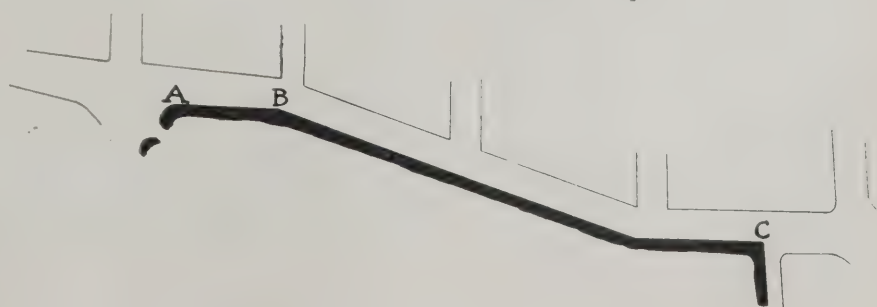
—The answer to this enquiry entirely depends upon whether the road from B to C is a "new street" within the meaning of the Act, or whether it has hitherto been dedicated to the public and repairable by the U.D.C. (as representing the inhabitants at large). I rather gather, from the particulars given, that the entire site of the roadway from B to C is the property of a private person, and that the seats referred to have only been placed there by the expressed, or possibly tacit, permission of that person. Under these circumstances the replies to the numbered queries are:—(1) Yes; the hotel company possess a frontage to the new street, and the question as to whether they intend to employ it or not is quite immaterial. (2) No; the land over which the road passes is not vested in the U.D.C., and consequently it is not for them to say whether any person shall, or shall not, have access to it.

F.S.I.

Post of War Department Surveyor.

X.Y.Z. writes: "Would you kindly inform me to whom application must be made for appointment as a district surveyor to the War Department?"

—The Civil Service Commissioners, Burlington Gardens, London, W., would probably be able to give full information with respect to any vacancies for surveyors in the War Department.



THE BUILDER, THE WORKMAN, AND THE STATE.

BY G. HENRY WRIGHT.

At the fifth annual meeting of Midland Centre secretaries of the National Federation of Building Trades Employers, held at the Imperial Hotel, Birmingham, on the 9th March, the Secretary of the Birmingham Building Trades Employers Association (Mr. G. Henry Wright) read a paper on the National Insurance against Sickness, Invalidity, and Unemployment. It was impossible to enter into the details of the history of national insurance in Germany; the author therefore confined himself to a few of the principal points necessary to elucidate the problem as it presents itself to the English employer. He said:—

The German system of national insurance has been in operation for more than a quarter of a century.

We seem to be in the midst of an epidemic of political sentiment, which may tend to the lessening of our industrial efficiency. Anything which removes the incentive to hard work and to perseverance must detrimentally affect the moral attributes of those from whom the incentive has been removed. Any system of national insurance established for the benefit of the workers should be constructed not only so as not to impose an undue or inequitable burden on the employer, but also so as to make it quite apparent to the employee that he is an effective contributor.

In Germany there is no unemployment insurance. The German system of national insurance covers sickness, invalidity, and old age. It is made up of (1) compulsory thrift on the part of the workers; (2) employers' liability and contributions; (3) State aid.

General compulsory insurance of workmen against sickness in Germany dates from 1883. The number of persons insured in 1903 was over 11,000,000. Contributions depended on the rate of earnings, and varied from $1\frac{1}{2}$ to 3 per cent. of the average earnings. The total contributions worked out at about 18s. per head, towards which the workmen paid two-thirds and the employers one-third. Out of this fund the workmen receive sick pay beginning from the third day of incapacity, for 26 weeks in case of sickness and 13 weeks in case of accident.

The German State system of accident insurance belongs to the same period. The number of persons insured in 1903 was 19,000,000. The whole of the liability after 13 weeks' absence is upon the employers. In 1903 the total receipts represented 8s. per head to the employers, which is considerably less than the liability to employers in this country under the Workmen's Compensation Act, 1906.

The German system of invalidity and old age insurance dates back to 1889. The number of persons insured in 1903 was over 14,000,000, and the contributions represented about 10s. per head—one-half of which was paid by the employer and one-half by the worker. In addition to this every pension is supplemented by a State bonus.

It will thus be seen that in Germany national insurance is a huge system. What are the proportionate burdens? Dr. Shadwell, in his work on "Industrial Efficiency," says that in 1902 the State contribution was £2,000,000, the employers' £10,000,000, and the workers' £9,000,000, whilst the accumulated funds approximated £80,000,000. Sir Kenelm Digby, the Chairman of the Departmental Committee on Workmen's Compensation, in a Memo-

randum issued with the Committee's Report, quoted the following figures showing the incidence of the whole burden of German national insurance in 1901, when the contributions to the threefold system were as follows:—Employers, 45.20 per cent.; employees, 37.64 per cent.; State subsidies 6.43 per cent.; interest on invested funds, 10.3 per cent.

It may truly be said that the burden imposed on employers in Germany is a heavy one, representing, as it does, a payment averaging 19s. per head of all employed. But what is the employers' burden in this country under the Workmen's Compensation Act? No one will deny that it is heavy, and everyone realises that it is continually increasing and that the limit of cost, even under the present law, is not yet in sight. Let us add to this the employers' contribution through State taxes to the old age pensions, and the burdens of the poor-rate on employers for the maintenance of workmen invalidated by chronic sickness or permanent incapacity, or infirmity and premature old age, and I venture to think that the British employer's burden is already more than that which has to be borne by the German.

During the present session of Parliament it is intended to launch vast proposals for national insurance against unemployment, sickness, and invalidity, and these should have the scrutiny and criticism of every association of employers in the country. The Birmingham Chamber of Commerce have had this matter under consideration for some time, and have made frequent efforts to obtain information as to the details—actual or probable—of these proposals. Up to the present these have been refused, and we are therefore thrown back on to such scraps of information as have appeared in the public press.

In 1909, Mr Winston Churchill, then President of the Board of Trade, outlined a scheme of national insurance against unemployment, to be applied in the first instance to the following industries:—(a) building, (b) shipbuilding, (c) engineering, (d) construction works generally, and (e) vehicle making (which presumably includes the cycle and motor car industries). These industries, according to Mr. Churchill, employ about $2\frac{1}{4}$ million men—i.e., one-third of the total number engaged in purely industrial occupations. He stated that the amount of the contributions was not definitely determined, but that they would be something like $2\frac{1}{2}$ d. a week per head from the employer, $2\frac{1}{2}$ d. a week per head from each worker, and $2\frac{1}{2}$ d. a week per head from the State. Out of the fund so created, the bona fide unemployed worker, after seven days' unavoidable unemployment, would commence to receive something like 8s. per week, which might go on for 15 weeks, or longer if the benefits were slightly less. At the end of this period he would drop out, and when he next got employment would begin all over again. The second time he would have to subscribe longer before he became eligible for benefit. The original period of probation was likely to be fixed at about eight months, whilst the next (for those who had dropped out) would be more extended and the next more lengthy still.

In a report prepared by the Birmingham Chamber of Commerce in November, 1909, calculations were made as to what these proposals would mean from a monetary point of view, and from these data the author deduced that the greater part of the

cost of collection would fall on the employer, and only a small part on the administration, and that it would cost 27s. to distribute £20 16s. per annum.

The following paragraph from the Chamber of Commerce report gives the startling result of an examination of the question of cost from the employer's point of view:—"An employer with 100 workmen would pay £54 3s. 4d. per annum, equal to income-tax at 9d. in the £ on an income of £1,440 per annum. If the employer's income was only half this sum, namely, £720 (and many are no doubt less), the cost to him of the insurance scheme would be equivalent to an additional income-tax at the rate of 1s. 6d. in the £. With five times as many workmen the cost would be five times as great, and with ten times as many it would be ten times as great, and the incidence, calculated as income-tax, would remain the same according to the small income of the employer." It should be noted that the above estimate takes no account of the cost to the employer of calculating, deducting, entering, and transmitting the contributions, which might reasonably be estimated at not less than 5 per cent.

While believing in the enormous advantages of a system of national contributory insurance on a compulsory basis, I must confess that these calculations and estimates tempt me to express the view that this additional burden alone is a crushing burden to put on the back of the employer. However, it by no means exhausts the matter, for there are also proposals which will shortly be launched providing a scheme of national insurance against sickness and invalidity. The only statement that has yet appeared in this connection has been a semi-official *communiqué*, which appeared in the daily press on the 4th January, and from which it seems that this scheme is to apply to the whole of the working population of the country whose incomes are below the income-tax level of £160 a year. From the same paragraph it appears that the amount of the insurance is to be 5s. a week between the ages of 16 and 70, and that the contributions to the fund are to be one-half by the workman and the remaining half in equal proportions by the employer and the State.

Assuming that the employers' share will be $2\frac{1}{2}$ d. per week per head, the startling calculations previously quoted would have to be at least doubled, and to this would have to be added the already enormous burden of workmen's compensation and the employers' heavy contributions through State taxes and poor rates to the cost of old age pensions and the maintenance of the pauper classes. It is perhaps well to remark that the employer would not be relieved by the loss of a workman's services through sickness or infirmity, because, first, he would have to employ someone else to take that workman's place; and, secondly, his contributions would be made in respect of the workpeople he employed, and not those who were placed on the insurance fund.

I do not think there would be found many employers who would be averse to the adoption of a comprehensive scheme of national insurance, but I hold that it must be an indispensable condition that the burden is equitably distributed. This obviously cannot be done by super-imposing the German contributory system upon our present system. Serious consideration must be given to the undoubted fact that the effect of the Workmen's Compensation Act, 1906, has been to double the cost to the employers, and that the premiums payable continue to be

increased each year. Practically the whole of the increased cost has been caused by the reduction of the qualifying period from 14 days to 7 days, coupled with the liability to pay compensation from the date of the accident where the workman is disabled for more than two weeks. The question which has to be settled, therefore, is how, with mutual benefit to employer and employed, can a system of national contributory insurance be established? It must be recognised that the cost of production is one of the most important factors in international competition, and that anything which tends to increase this cost in one of the principal competitive areas must react to the disadvantage not only of the employers but also of the workers in that area.

The Government scheme should be so framed as to stimulate effort on the part of industrial workers, and not so as, even in the slightest degree, to undermine those great qualities of independence and self-reliance which have ever been so valuable an asset. How then can this be, at any rate, partly accomplished? In the report of the Chamber of Commerce to which I have referred it is suggested that in connection with any scheme of national insurance against sickness and invalidity, instead of super-imposing the German system the question of grafting it into the English system should be considered. An injured workman in Germany is compensated out of the sickness insurance fund for a period of thirteen weeks. Seeing that the workers are contributors to this fund to the extent of two-thirds, they are personally interested in protecting it

from such abuses as are experienced here in connection with the Workmen's Compensation Act, especially since it was amended and extended in 1906. It is notorious that one of the evils which have arisen out of the law of Workmen's Compensation has been the depletion of the funds of sick and benefit societies, and this has been due to the fact that injured members in receipt of compensation and sick benefit have had no incentive to return to work at the earliest possible moment, as they have been nearly as well, if not better, off without work. There has undoubtedly been a very serious spread of malingering and a corresponding deterioration in the condition of our industrial efficiency. This is, perhaps, the greatest danger which must be guarded against, and it is contended that employers are reasonably entitled to demand that no new burdens shall be imposed upon employers unless there is a readjustment of existing burdens. It is suggested that this might be partly accomplished by making legal provision for injured workmen to be compensated out of sickness insurance fund for a period of not less than four weeks after they become entitled to compensation.

This is a very moderate and reasonable proposal. It would enable the commercial community to regard sympathetically and also to support a well-considered scheme of national insurance, even if it involved them in an extra burden. It would relieve the employer from liability for the great bulk of the trivial accidents of which advantage is taken by the indolent worker on the one hand and the speculative lawyer

on the other, and it would undoubtedly strengthen our industrial efficiency.

I most earnestly urge that it is the bounden duty of every association of employers to give this vital question their most careful consideration and at the earliest possible moment to take steps to place their views before the Chancellor of the Exchequer and their local Members of Parliament.

ST. BARTHOLOMEW THE GREAT, SMITHFIELD.

The Priory Church of St. Bartholomew the Great, Smithfield, was founded by Rahere in 1123, and the Norman portion of the existing building was probably completed in 1133, when King Henry I. granted a Charter of Privileges. Rahere, who was one of thirty canons of St. Paul's Cathedral, and a great favourite at the Court of King Henry I., about the year 1120 went on a pilgrimage to Rome; and while visiting the supposed site of the martyrdom of St. Paul he was attacked with the malaria fever. Recovering, he made a solemn vow that if he were spared to reach London in safety he would build a hospital for its poor. The first building erected was the church, which was gradually surrounded by the buildings and offices necessary for a monastic community—cloisters, infirmary, chapter house, etc., and in this settlement was installed for 400 years a body of the Order of the Canons Regular of St. Austin.

The church is entered from the enclosed churchyard through a new porch erected in 1893, in the base of the tower, which is



CHURCH OF ST. BARTHOLOMEW THE GREAT, SMITHFIELD: VIEW FROM THE NORTH TRANSEPT, LOOKING EAST.

NOTES FROM PARIS.

The Salon of the Société Nationale des Beaux-Arts will be held, as usual, at the Grand Palais, and will open on April 16th, and close on June 30th. Varnishing day will be April 15th. The architectural exhibits for the 1911 Salon of the Société des Artistes Français should be deposited at the Grand Palais des Champs Elysées on April 2nd and 3rd, between 11 p.m. and 5 p.m. Varnishing day is fixed for April 29th, and the opening for Sunday, April 30th.

M. Pams, the French Minister of Agriculture, has received an influential deputation which placed before him the project of building a new Palace of Agriculture, near the Porte Maillot, to take the place of the old Gallery of Machines, and to house the annual national agricultural meeting. M. Pams informed the deputation that he was negotiating on the subject with the Minister of War and the Paris Municipal Council, and he promised to do all in his power to forward the enterprise.

The choice of a site for the new School of Decorative Arts appears to have been at length definitely settled, and it is in the Rue Denfert-Rochereau that the new building will probably be erected. The new buildings, it is stated, will be of only one storey, and will not include residences for the officials. A large garden will be available for open-air study.

In those recent Beaux-Arts competitions of which the results have been announced, two were open to students in the great provincial schools as well as those in Paris. In the first competition, of which the subject was "Three porticoes of Greek Doric Order," Paris students obtained 57 mentions, against 9 at the Lyons school and 4 at the Marseilles. In the second competition, "Operating Theatre in a large Hospital," Paris students obtained 50 mentions, against one each for Rennes (5 candidates), Lille (3), Lyons (4), and Marseilles (7). The third competition, of which the subject was "Un Mont-de-Piété," was confined to Paris students, who received 15 mentions.

A committee has been formed with the object of raising a memorial to the sculptor Emmanuel Frémiet.

M. Louis Bonnier, who has been nominated to succeed M. Bouvard as administrative director of architectural services and of promenades and plantations to the city of Paris, was born in 1856 at Templeuve (Nord), and became the pupil of MM. Moyaux and André. He has held many civic and Government appointments, and was architect-in-chief of the Universal Exposition of 1900, and he has been upon eight occasions president of the Société des Architectes Diplômés par le Gouvernement. He designed the National Defence Monument at Lille, the Hotel-de-Ville at Issy-les-Moulineaux, municipal buildings at Templeuve, the laboratory of maritime zoology at Wimereux, and much domestic work in the Pas-de-Calais, the Aisne, the Alpes Maritimes, and elsewhere. He is a familiar figure at international and other architectural congresses, and similar functions.

A new Association (Les Amis de Paris) has just been formed, which has for its aim the betterment and the beautification of Paris, with the fundamental idea of "attracting and retaining visitors, and of rendering Paris more agreeable to inhabit even for Parisians."



CHURCH OF ST. BARTHOLOMEW THE GREAT, SMITHFIELD: VIEW LOOKING TOWARDS THE WESTERN ENTRANCE.

wholly of brick, and which was built in the year 1628, at the time when the original central tower was demolished, probably owing to its great weight being too much for the internal piers to carry. The tower contains a peal of five bells, all bearing a foundry stamp assigned to Thomas Ballesdon, who died about 1510. They belonged to the Augustinian canons, and are probably among the oldest in London. The interior of the church is exceedingly impressive, the circular piers with their cushioned caps and the whole of the triforium being examples of the best period of the Norman style. They are in an excellent state of preservation. In the early part of the fifteenth century Prior John sought to "beautify" the building by removing the circular eastern termination and substituting a square end, in which he

inserted two great windows, gaining thereby an opportunity of filling the delicate tracery of the period with stained glass work, so widely used at that time. However, a most successful piece of real restoration has been carried out in recent years, with the result that the exact form and general architectural features of the old Norman apse have been reproduced with great skill, and in complete harmony with the work of the twelfth-century builders. The church is about 130 ft. in length, exclusive of the Lady Chapel, and 57 ft. in width, the dimensions being taken internally. The restoration work was carried out under the guidance of Sir Aston Webb.

Newmarket has decided to erect a new town hall as a memorial to the late King Edward.

THE BUHRER SYSTEM OF BRICK & TILE MANUFACTURE.

At a meeting of the English Ceramic Society recently held at the Hanley Municipal Secondary School, a paper forwarded by Mr. Jacob Buhner, of Constance, dealing with the Buhner system of kilns and dryers with fan draughts, was read by Mr. V. Goddard. A description was given of one of the many plants which the essayist stated he had been building for the last twenty years with some success on the Continent, and the annual output of which was said to be from eight to nine millions of bricks and roofing tiles. The lay-out of the flues of the kiln, and also the valves built in the dryer between the two chamber rows for regulating the drying, were described by diagram. The fire gallery of the kiln, which is of sixteen chambers, was 6 ft. 10½ ins. wide, 7 ft. 6½ ins. high, and about 410 ft. long. The dryer consisted of 32 chambers, each 6 ft. 6 ins. wide, 7 ft. 6½ ins. high, and 26 ft. long. The brick machines were housed behind the dryer, and the shafting put on pillars of brickwork. A steam engine of some 120 horse power on one side of the machine house was belted to the line shaft. With an engine of sufficient power the waste steam could be well used for drying the goods, and the more so if an air condenser were added that would produce from five to six cubic metres of air heated up to 50 to 60 degrees Centigrade per second.

The Fan-draught Method.

The fire gallery of the kiln was about 125 metres in length, and the kiln could be burned round in from five to six days, the stoking being done from the top of the kiln through fire holes built in rows of three holes into the arch at a distance of 4 ft. to 4 ft. 3 ins. one from the other. In burning at such a high speed an even temperature in the kiln was maintained, including the chambers behind the fire, where no stoking was done. This kind of burning required a good strong fan draught near the paper damper. The fan for the kiln, which threw out into space about 30 cubic metres of air per second, produced also the required draught for the dryer, so that there was still a depression of 40 to 50 millimetres. It was obvious that with such a strong draught the valves in the kiln and dryer must close well to avoid refuse in the kiln and dryer. Intelligent men could work this kiln and dryer in such a way that there was practically no offal at all, and about 80 per cent. of first-class goods were drawn. Results such as these were stated to have impressed very much about 40 members of the Institute of Clayworkers, who, when visiting the Berlin Building Trades Exhibition in June last, inspected two of the largest brick and tile works which the essayist had constructed during recent years in Germany.

Coal Consumption.

With regard to the question of coal consumption, the heat expenditure in such kilns when heated to about 1,000 degrees centigrade was from 210lb. to 245lb. of coal for every 1,000 bricks of 25 by 12 by 6½ c.m. according to the nature of the clay, whereas in kilns with chimney draught 4 to 6cwt. of coal were burned for the same quantity of bricks. It would be readily seen that the cost of the installation of a fan of such a description, and its upkeep, were of no concern when compared with the advantages to be obtained by its application. A significant factor was that by means of one of these fans it was possible to fire yearly eight to ten

millions of bricks of the size already mentioned in a small kiln with a fire gallery of 7 ft. broad, 7 ft. 6 in. high, and a total length of 100 ft. This fan could be built on to any existing continuous kiln with great advantage. The goods were brought from the presses on transfer cars on rails into the dryer and kiln, and were removed in the same way, thus saving a good deal of labour.

In illustration of the increasing importance of the Buhner system, in the opinion of Continental brick and tile manufacturers, it was stated that there were now 315 Buhner fans in operation on the Continent in works which had either been constructed or remodelled after the Buhner

system, and the average annual output of all these works was 1,337 million bricks and roofing tiles. Concluding, the essayist said that unfortunately he had not yet been able to build one of these kilns in England. Why he did not know, but although he was now 84 years old he was still hoping to see that long cherished wish accomplished.

The Carron Company, of Carron, Stirlingshire, intimate that, having lately acquired the business of Messrs. Longden and Co., of Phoenix Foundry, Sheffield, and 3, Berners Street, London, they have now appointed Mr. A. Harold Smith as art director for their combined businesses.



CHURCH OF ST. BARTHOLOMEW THE GREAT, SMITHFIELD: DETAIL OF MAIN
ARCADE AND TRIFORIUM ARCHES.

FEDERATION NEWS.

Middlesbrough and District.

The monthly general meeting of Middlesbrough and District Building Trades Association was held in the Corporation Hotel, on Tuesday, March 7th, the president (Mr. Geo. Hudson) in the chair.

With respect to a resolution from Tees-side Federation Executive Committee re tendering without quantities, to be sent to local architects, namely, "That where no quantities are supplied, and only two builders are asked to tender, only two sub-contractors in each trade should be asked to tender," it was decided to suggest that this resolution should be sent to the architects direct from Tees-side, and also, at the same time, in order to facilitate and help builders in tendering, that the architects should be asked "in arranging for and preparing quantities, to use one side of the paper only, and that each trade be bound separately."

Correspondence was read from the Northern Counties Federation re sending in priced schedules with tenders, and the secretary reported that members likely to tender for the work in question had been reminded of the desirability of not sending in priced schedules unless tender was accepted.—WALTER RIGBY, Secretary.

A Confederated Association.

A most enthusiastic gathering of master plasterers, master plumbers, and master slaters took place on March 9, in the Builders' Exchange, Sheffield, under the auspices of the Confederated National Association of Master Plasterers, Plumbers, and Slaters. The chair was occupied by Mr. J. P. Cox, J.P., of Knutsford, President of the Confederation.

The chairman pointed out that they were met for the first time in history as a united body, and had come together in that way in order that they might inaugurate a new era in respect to their particular trades. They were generally known as sub-contractors, but their distinctive calling fully entitled them to become contractors, and to deal direct with the building owner or architect. As an organisation they had perhaps adopted the slow and sure principle in the past, but he hoped they were now to become more aggressive, though in no sense offensive. They were met to consider, and he hoped to secure, certain reforms affecting their respective trades, and generally to improve the status of their business.

The conference then proceeded with the agenda, and three papers were read as follows:—"Single Tendering," by Mr. J. P. Cox, J.P., of Knutsford; "Payments to Sub-contractors," by Mr. J. B. Johnson, Liverpool; "A Plea for Sub-Contractors," by Mr. Jas. Townsley, of Hull.

The papers provoked considerable discussion, and many points in support of a reform were raised. It was stated that the Confederation consisted of nearly 2,000 members, and it was resolved that each one be requested to reply to a series of questions, and to assent to definite action being taken by the Executive with a view to securing the objects aimed at. The inception and history of the Confederation were traced, and the work of the past explained. An attempt to ally other sub-traders with the movement is to be made, and periodical meetings of the entire membership are to be convened.

Tenders.

Armagh.—For renovation of the Market House, for use as a technical school, for the Armagh Urban District Council.

T. Collen, Tandragee	... £2,237 10 0
R. Cullen,* Portadown	... 2,200 0 0
T. Copelands, 14, Whitla Street, Belfast	... 2,118 0 0

*Accepted.

Bedlington (Northumberland).—Accepted for erection of a new Council school, to accommodate 568 scholars, at Bedlington Station, for the Northumberland Education Committee.

Haswell and Waugh, Gateshead, £4,976. Twenty-seven tenders received in all.

Bristol.—For new offices for the North British and Mercantile Insurance Co., Bristol. Messrs. F. W. Wills and Sons, Architects, Bristol.

A. Dowling	... £6,449
I. Perkins and Sons, Ltd.	... 6,449
W. Cowlin and Sons	... 6,273
R. F. Ridd and Son	... 6,200
Stephens, Bastow and Co., Ltd.*	... 6,147

All of Bristol.

*Accepted.

Burton Latimer (Northants).—Accepted for erection of infants' school at Burton Latimer, for the Northants Education Committee.

Lewis and Son, Kettering, £2,274.

London.—For erection of lecture hall and library at the Horniman Museum, for the London County Council.

Higgs and Hill, Ltd., Crown Works, South Lambeth Road, S.E.	... £5,935
Holloway Bros. (London), Ltd., 21, Belvedere Road, S.E.	... 5,870
F. and H. F. Higgs, Hinton Road Herne Hill, S.E.	... 5,840

E. Lawrence and Sons, 16, Wharf Road, City Road, N.	... 5,688
W. Johnson and Co., Ltd., Wandsworth Common, S.W.	... 5,638
H. L. Holloway, Union Works, Church Street, Deptford, S.E.	... 5,600
J. and C. Bowyer, Ltd., Upper Norwood	... 5,425
Wm. Downs, Hampton Street, Walworth Road, S.E.	... 5,260
Gathercole Bros.,* High Road, Norbury	£5,130

*Recommended for acceptance.

London, S.E.—For erection of a gymnasium and an art room, etc., at the Residential and Day Training College, Avery Hill, Woolwich, for the London County Council.

B. E. Nightingale, 67, Watling Street	... £2,299 19 3
Newell and Lusty, 24 and 26, Wilson Street, Poplar	... 2,116 19 3
W. Pollock, West Park, Eltham	... 2,090 0 0
E. Proctor and Sons, 326, High Street, Plumstead	... 2,059 8 6
F. and T. Thorne, Isle of Dogs	... 2,049 0 0
Kirk and Randall, Woolwich	... 2,048 0 0
E. Lawrence and Sons, Ltd., 15, and 16, Wharf Road, City Road	... 2,016 0 0
J. and M. Patrick, Wandsworth	... 2,013 0 0
J. Smith and Sons, Ltd., South Norwood	... 1,974 0 0
J. and C. Bowler, Ltd., Upper Norwood	... 1,965 0 0
R. A. Lowe and Co., Chislehurst	... 1,963 0 0
Lole and Co., Trafalgar Square, Chelsea	... 1,925 0 0
C. P. Roberts and Co., 138, St. Paul's Road, Highbury	... 1,908 0 0
Gathercole Bros., London Road, Norbury	... 1,783 15 0
F. Webster and Son, Grove Vale Works, East Dulwich	... 1,778 18 7
R. Cook and Sons,* Crawley, Sussex	... 1,736 17 6

Architect's estimate, £2,218.

*Recommended for acceptance as amended to £1,997 12s. 6d.

London, S.E.—For the structural improvement of the Morden Terrace school (Greenwich), for the London County Council.

J. Appleby and Son, Southwark Park	... £17,464 0 0
McLaughlin and Harvey, Ltd., 13, Brecknock Road	... 17,002 8 2
W. Downs, Hampton Street, Walworth	... 16,114 0 0
J. Garrett and Son, 83, Balham Hill	... 15,927 0 0
Kirk and Randall, Warren Lane, Works, Woolwich	... 15,926 0 0
G. E. Wallis and Sons, Ltd., Pantons Street, Haymarket	... 15,635 0 0
J. and M. Patrick, Wandsworth	... 15,628 0 0
W. Akers and Co., Ltd., High Street, South Norwood	... 15,593 0 0
H. L. Holloway, Church Street, Deptford	... 15,594 0 0
E. Lawrence and Sons, Ltd., Wharf Road, City Road	... 15,551 0 0
Patman and Fotheringham, Ltd., 15, Park Street Islington	14,923 0 0
J. and C. Bowyer, Ltd., Upper Norwood	... 14,670 0 0
T. D. Leng, Evelyn Street, Deptford	... 14,666 0 0
Gathercole Bros.,* London Road, Norbury	... 14,309 0 0

New wall in lime mortar in place of cement mortar—saving.

J. Appleby and Son	... £74 0 0
McLaughlin and Harvey, Ltd.	... 113 9 0
J. Garrett and Son	... 83 0 0
Kirk and Randall	... 138 0 0
G. E. Wallis and Sons, Ltd.	... 170 0 0
J. and M. Patrick	... 124 0 0
W. Akers and Co.	... 41 0 0
H. L. Holloway	... 127 0 0
E. Lawrence and Sons, Ltd.	... 56 0 0
Patman and Fotheringham, Ltd.	... 90 0 0
J. and C. Bowyer, Ltd.	... 123 0 0
T. D. Leng	... 66 0 0
Gathercole Bros.	... 148 0 0

New fire-resisting floors in old rooms in place of joisted timber floors—extra.

J. Appleby and Son	... £387 0 0
McLaughlin and Harvey, Ltd.	... 281 7 5
J. Garrett and Son	... 288 0 0
Kirk and Randall	... 302 0 0
G. E. Wallis and Sons, Ltd.	... 328 0 0
J. and M. Patrick	... 276 0 0
W. Akers and Co., Ltd.	... 322 0 0
H. L. Holloway	... 322 0 0
E. Lawrence and Sons, Ltd.	... 358 0 0
Patman and Fotheringham, Ltd.	... 245 0 0
J. and C. Bowyer, Ltd.	... 300 0 0
T. D. Leng	... 289 0 0
Gathercole Bros.*	... 306 0 0
Gathercole Bros.*	... 268 0 0

Architect's estimate, £15,249.

*Recommended for acceptance

Margate.—For erection of pavilion, colonnade and arena at the Fort, Margate, for the Corporation.

Paramors, Ltd., Margate	... £19,818
A. N. Coles, Plymouth	... 19,700
C. Wall, Ltd., Lloyds Avenue, E.C.	19,582
Davidson and Miller, Newcastle-on-Tyne	... 19,121

Nightingale and Wingfield, Lambeth	19,120
R. A. Lowe and Co., Chislehurst	19,000
W. Patinson and Sons, Ltd., Westminster	... 18,818
H. M. Patrick, Wandsworth	... 18,570
Perry and Co., Ltd., Bow, E.	... 18,300
J. Smith and Sons, Norwood	... 18,270
Kirk and Randall, Woolwich	... 17,998
Hayward and Paramor, Folkestone	17,768
G. Browning, Canterbury	... 17,550
Stephens, Bastow and Co., Ltd., Bristol	... 17,670
G. Denne and Sons, Deal	... 17,590
H. Lovatt, Ltd., Wolverhampton	... 17,500
L. Seager, Sittingbourne	... 16,998
F. E. Minter, Putney	... 16,725
T. T. Deane,* Walmer	... 16,449
T. C. Gluyas, Bristol	... 16,000

*Accepted.

Middlesbrough.—For erection and completion of a new wing, and extensive alterations and additions at the Linthorpe Certified Industrial School, Middlesbrough, for the Education Committee. S. E. Burgess, M.I.C.E., Borough Engineer and Surveyor.

D. Doughty and Sons, 128, Newport Road	... 3,884 0 0
J. G. Robson and Sons, 100, Portman Street	... 3,802 0 7
Vinter and Davison, 3, Queen's Road, Linthorpe	... 3,797 0 0
B. Crisp and Sons, 4, Glenholme Terrace, Borough Road	... 3,757 6 6
Allison Bros., Marsh Road	... 3,745 0 3
Duchars and Bowers, Angle Street	... 3,725 6 4
S. Sheriff and Sons, South Shields	3,670 0 0
S. Coates, Ltd., 1, Langdaugh Place, North Ormesby, near Middlesbrough	... 3,668 10 8
H. McNaughton, Snowden Road	... 3,625 12 9
W. Nicholson and Son (Leeds), Ltd., Leeds	... 3,583 0 0
G. Radge, Normanby, R.S.O., near Middlesbrough	... 3,577 19 9
Hudson Bros., Fidler Street	... 3,500 0 0
P. Rhodes, Leeds	... 3,497 15 0
W. A. King and Sons, Ltd., Kings Road, North Ormesby, near Middlesbrough	... 3,280 0 0

Rest of Middlesbrough.

*Accepted.

Peterhead (Scotland).—For the construction of a corrugated steel and timber lifeboat house and solid concrete and reinforced concrete (Considere system) slipway on a site adjoining Lodge Walk, Peterhead, near the entrance to the south harbour, upon the foreshore and sea bed thereat, for the Committee of Management of the Royal National Lifeboat Institution. W. T. Douglass, M.I.C.E., engineer, 15, Victoria Street, Westminster, S.W.

Stuar* and Son, Peterhead	... £3,469 3 10
W. Harbrow, London	... 2,801 11 4
Exors of J. Arundel, Bradford	2,762 13 4
Darlington Construction Co., Darlington	... 2,729 3 8
J. Adams and Co., Glasgow	... 2,576 10 11
Scott, Marshall and Co.,* Edinburgh	... 2,563 10 0

*Accepted.

Stonehouse, Glos.—For the erection of a chapel and Sunday school, for the Wesleyan Methodist Trustees. William F. Bird, M.S.A., Architect, Midsomer Norton. Quantities by the Architect.

J. Simmonds, Gloucester	... £2,865 0 0
C. H. Hayward, Bath	... 2,680 0 0
Wm. Webb, Bath	... 2,599 18 0
Byard and Sons, Gloucester	... 2,559 0 0
A. S. Cooke, Stroud	... 2,547 9 3
Chancellor and Sons, Bath	... 2,506 0 0
Maxtin and Son, Stonehouse	... 2,496 6 7
Baxter and Sons, Stroud	... 2,466 11 4
Hayward and Wooster, Bath	... 2,465 0 0
Jacob Long and Sons, Bath	... 2,450 0 0
Wm. Jones, Gloucester	... 2,418 0 0
Orchard and Peer, Stroud	... 2,400 0 0
A. R. Blick, Stonehouse	... 2,398 0 0
Coles Bros., Peasedown S. John	... 2,367 0 0
F. J. Amery, Bath	... 2,359 0 0
W. F. Drew,* Chalford, Stroud	... 2,343 0 0
E. Walters and Son, Bristol	... 2,190 0 0

Architect's estimate, £2,183.

*Accepted, after revision by omission of Tower.

Tottenham.—For erection of 85 additional cottages on the fourth part of the Tower Gardens section of the White Hart Lane Estate, for the London County Council.

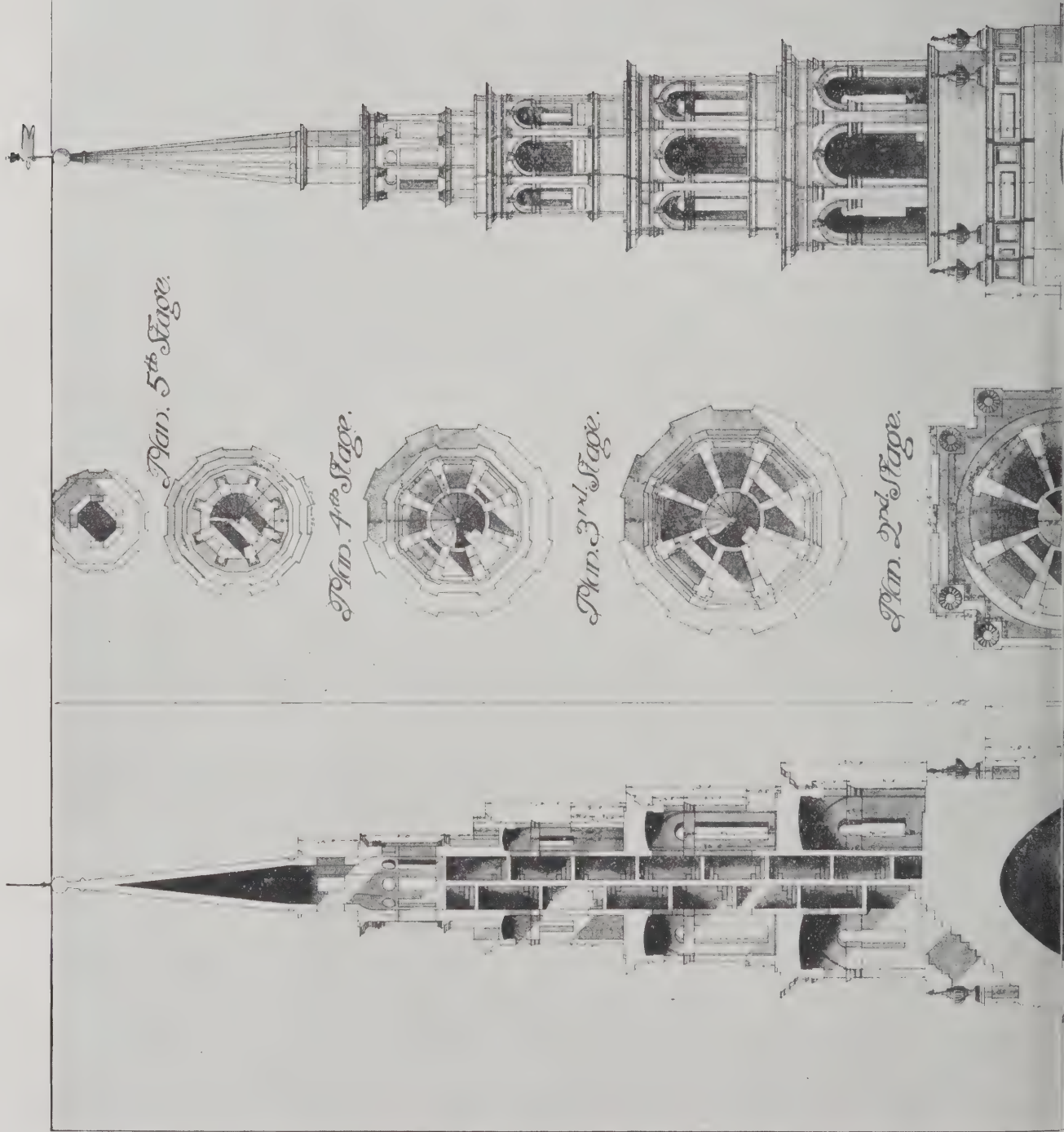
A. Roberts and Co., Ltd., Earl's Court Road, S.W.	... £20,128
W. Downs, Walworth Road, S.E.	... 18,197
F. J. Coxhead, Leytonstone	... 17,900
W. Lawrence and Son, Finsbury Circus, E.C.	... 17,278
Nicholls and Son, Finchley	... 16,543
Rowley Bros., Tottenham	... 16,510
A. Monk,* Lower Edmonton	... 16,160

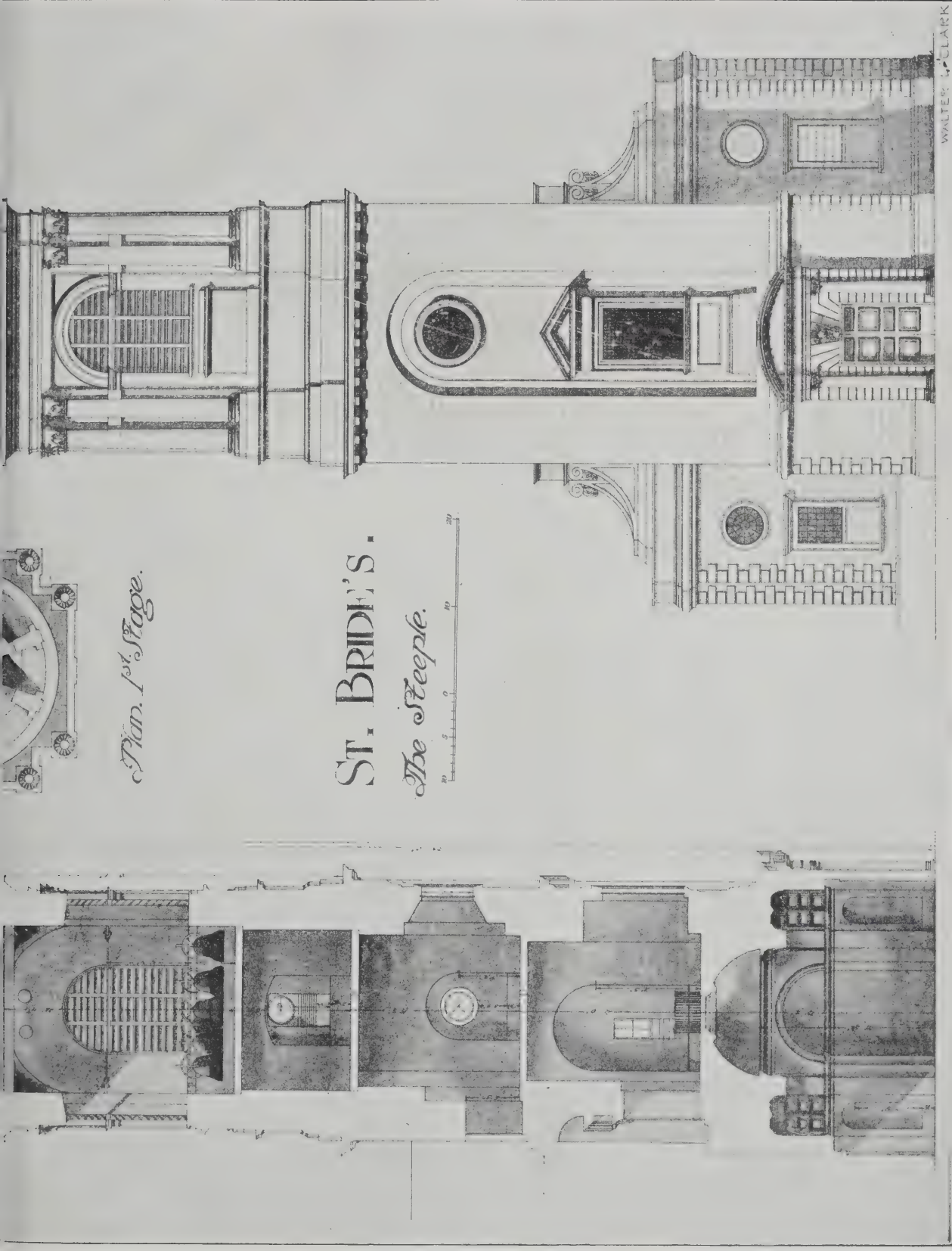
*Accepted.

Wolverton.—For alterations and additions to the Bakery Department, for the Wolverton Industrial and Provident Society, Ltd. Mr. A. W. Wilson, Architect, St. James' Street, Stantonbury, Bucks.

A. P. Hawbin, Northampton	... £1,329
Hy. Kemp and Sons, Stantonbury	... 1,376
Ebbs Bros., Wolverton	... 1,338
E. Green,* Northampton	... 1,147

*Accepted.





Plan, 1st Stage.

ST. BRIDE'S.

The Steeple.



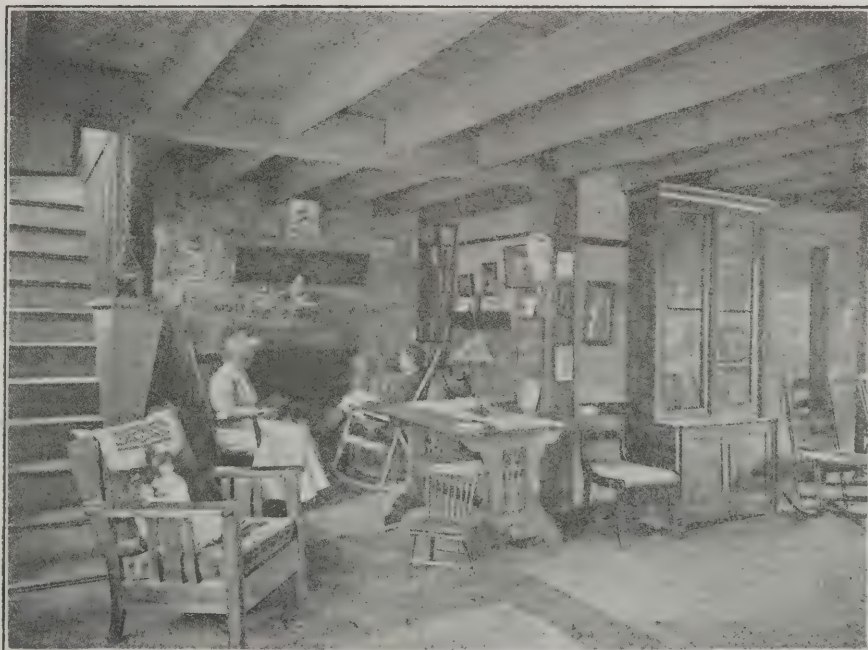
MEASURED AND DRAWN BY WALTER L. CLARK.
(From the Architectural Association Sketch-Book.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MARCH 29th, 1911.

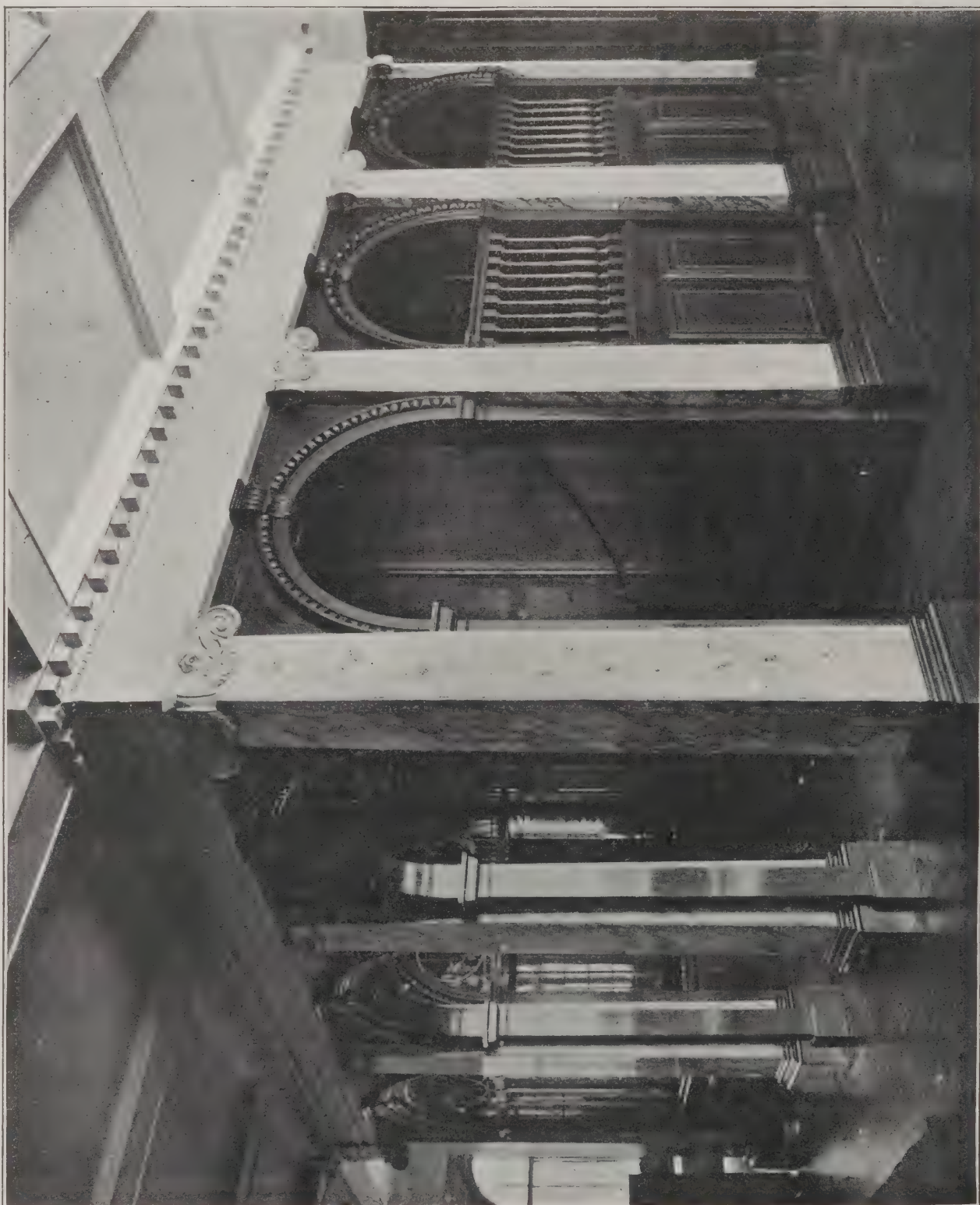
Volume XXXIII.

No. 844



THE LUDICROUS IN HOUSE DESIGN: AN AMERICAN EXAMPLE.

"The fireplace seems the appropriate place for a motto."



DETAIL OF BUSINESS PREMISES, WIGMORE STREET, LONDON. WALTER CAVE, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

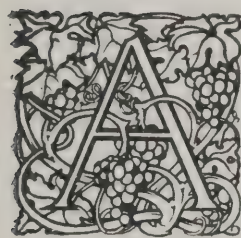
MARCH 29th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 844.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Decorating the Processional Route.



GOOD deal of public interest has been aroused in regard to the decoration of London on the occasion of the King's Coronation, and we seem to be gradually rising to the idea that festival decorations of this kind should be carried out in an artistic form, and that loyalty may be expressed quite as sincerely by decorations based on a well-considered system as by the mere accumulation of ornaments at everyone's will and pleasure, without any ruling motive pervading the whole and rendering it a comprehensive scheme. Some eminent artists have offered their assistance towards formulating such a scheme, but it does not appear—so far—that any special steps have been taken to render their services practically available. Possibly we may hear more of this later on.

The most important field for decoration is naturally the route of the state progress from Buckingham Palace to the Abbey. The Coronation ceremony is the climax, and the procession to the Abbey leads up to it. What can be done to render this part of the day's pageant as effective as possible?

It is to be presumed that Mr. Brock's great group of the Queen Victoria Memorial will be completed for the occasion, so that at least we start with a great work of art. Sir Aston Webb's effective building at the east end of the memorial road will also be complete—it is so, in fact, now, except for some details in connection with the gates; and the wide straight avenue, with the monument at one end, and this grandiose architectural erection at the other end, already, as one stands on the axis of the road, has a very stately effect. What more can be done with it for the special occasion?

The regularly spaced trees, unfortunately, are still but small, and in an early stage of growth. Trees will not grow to order, nor can we apply the method of the American millionaire in the play, who tells his head gardener, "Look here! If that aloe is not in flower in a week, you go!" But we have power over the works of man, at all events, and the first thing to be done should be to compel the Westminster Borough Council to remove their commonplace electric light standards to make way for something more worthy of the position. The design for these would naturally be in the hands of Sir Aston Webb, as the architect for the whole Victoria Memorial scheme; it is understood that something specially designed, as part of the Memorial Road scheme, was always intended; the design, for all we know, may have been already made; and we have never been able to understand why the Borough authorities were allowed to erect the lamp standards that at present line the thoroughfare.

The original design for the Victoria Memorial Road—which, as we now see it, has been sadly cut down from its first state—included, if we remember right, certain alcoves with verdure, fountains, and sculpture, at regular intervals along the margin of the road. Since these (from considerations of cost, we presume) were abandoned as permanent erections, we may suggest that something of the kind should be put up as

temporary decorations, to add to the stateliness of the route. Of course, one would much rather the opportunity were taken to revive them in a permanent form; a fountain or a statue backed by a semicircular alcove, at two intervals on the road, one on each side of it, would be a charming incident, and add immensely to the effect. Failing this, perhaps a temporary triumphal arch at two points on the road would be a desirable addition. The effect which has been used before in some of the streets, of Venetian masts with festoons across the road, would not be so suitable in the Mall; the masts would conflict with the trees, which, small as they are, form a symmetrical arrangement; and the festooning overhead is not wanted so much in an open road of this kind, surrounded with trees and verdure, as in a built-up street. There it is of excellent effect in shutting out the commonplaces of street architecture, and interposing a screen of verdure between the eye and the medley of cornices and chimney-stacks above; and in some of the streets through which the procession will ultimately pass, after the Coronation, this source of effect might well be largely employed.

The white garden façades of Carlton House Terrace, overlooking the Mall, give a great opportunity for effective decoration, if owners would combine in a general scheme, or accept a scheme presented to them by a central authority. The columns of the façade, where they stand free, should be woven round with spiral garlands, and, where they are engaged columns, festooned from the necking of one to that of the next. The same scheme of festooning could be carried out with the engaged columns in the lower buildings, on the level of the Mall. The Nelson Column and the York Column would of course be surrounded with spiral garlands; nothing does better in column decoration than this, the lines of the spiral contrasting so effectively with the vertical lines of the column.

Something important will certainly have to be done to mask the northern side of the opening into Whitehall, when the requisite demolition of houses has been made. This is, in fact, one of the crucial points of the route, and might very well be the site for a large triumphal arch, which would hide the uncomely features of the extemporised opening. But such arches should be distinctly architectural in design; not, of course, imitations of permanent building, but decorative design on an architectural basis. A request has already been made by a Colonial authority to erect a triumphal arch somewhere in Whitehall; if this is done, it should be seen to that the design is really a decorative one, and not, as with the Canada arch of the last Coronation, an advertisement of the food-productions of the Colony.

The system of masts and cross-festooning would not be applicable to the Whitehall portion of the route, any more than to the Mall, for a different reason; the street is too wide, and it contains a good many important buildings which should rather be seen, and decorated on their own lines, than shut out from view. The masts would be well enough, but they should carry flags rather than festoons; a great colour effect may be made with flags, without shutting out the important buildings from view. The decoration of such buildings as the War Office and the Government buildings in Parliament Street

would be best carried out by festooning the principal lines of the architecture; this should be done on a systematic and previously prepared design, not at haphazard. We might also suggest that Adam's delightful screen before the old Admiralty should be cleaned up—the stonework looks very dingy at present; and as it contains a row of empty niches, originally intended for sculpture, something might effectively be put in these to fill them, and give them a purpose; bronze tripods with flowers, for instance.

At the last Coronation the unhappy idea was adopted of erecting the waiting-rooms in front of the Abbey in an imitation Gothic style, with simulated buttresses, apparently with the absurd idea of "harmonising" with the Abbey. We hope this will not be repeated; it only gave rise to derision, except on the part of the daily papers, whose reporters know no better, and thought such a thing showed "excellent taste." There could not, in fact, be a greater mistake than to erect sham Gothic in front of a great Cathedral. The fact that the erection is a temporary one, entirely separate from the Abbey, should rather be emphasised than any attempt made to conceal it.

As to the interior of the Abbey itself, of course, as before, the venerable interior will be transformed into the aspect of a theatre, to the loss of all its religious associations, and the imminent danger of damage to the fabric. Protests, one knows, are useless; but it is a duty to protest nevertheless, not only in the name of architecture, but on other grounds. If it is considered that the Coronation of the Sovereign should be to some extent a religious ceremony, surely it would be far more impressive in that sense if the church were left in its ordinary aspect as a church, than if it is built up and defaced with mountains of staging like a circus. Perhaps people will some day come to recognise this.

The Salting Collection at South Kensington.

THE collection of works of art bequeathed by Mr. Salting to the South Kensington Museum, and now arranged in five rooms on the first and second floors of the building, will prove an astonishment to visitors. It is one of the most valuable donations ever made to our great Art Museum, and the wonder is that a single collector should have got together such a number of works of art, all of the highest class of their kind. But in this respect Mr. Salting was one of the most keen-sighted and cautious of collectors, and bought nothing that was not of the best and of the most genuine character, and did not scruple to clear out of his collection anything which on more mature consideration appeared to be of secondary interest or of doubtful authenticity.

A great deal of trouble and thought has been expended on the arrangement of these art-treasures. The carved furniture, mostly French, require to be seen by a side light to bring out the modelling, and accordingly screens have been arranged at right angles to the outer wall in one of the rooms, against which the examples of furniture have been placed, so as to get a side light on the work while concealing the back of the furniture, not intended to be seen. The principle of arrangement has been to place works in the same material together, instead of grouping by countries, so that students studying any particular class of work can find it all together, and compare one style with another. For the objects of the museum this is no doubt the best system of arrangement.

We can only give a brief indication of some of the contents of this wonderful collection. Among the furniture exhibits in Gallery 131 is a grand walnut side-board of the late sixteenth century, French, with terminal figures and satyrs carved with great vigour in the most approved style of late Renaissance grotesque, and with the doors, by a curious fancy, carved with two repetitions of the well-known Laocöon group, with the composition reversed in one of them, so as to render them symmetrical on each side of the centre. There

are several French pieces of furniture of the same style and date; but what we think still finer is a marriage coffer of early sixteenth century date, with the most beautiful and delicate carving of nymphs, ending in scroll-work, having between them a circular medallion, with what may be called a female Janus, or double-faced head. This is one of the most beautiful pieces of decorative furniture in the whole museum.

Near this is a case of Cinquecento jewellery and silversmiths' work from different countries, of which the most remarkable piece is a small circular dished tablet, of Spanish sixteenth century work, filled with a tiny subject of the Adoration of the Magi, in alto-relief, with an architectural background, which shows the curious combination of a series of Classic pilasters, carrying apparently a vaulted arched roof. Among the contents of this case are two beautiful pieces of English work; a spoon with a rock crystal bowl, and a diminutive watch, with an elaborately wrought metal case or cover. In the same room are collections of ivories—including a beautiful fourteenth century English diptych, with figures of Christ, and of the Virgin and Child; a large collection of Limoges enamel, French earthenware, Delft-ware, etc. Among the contents of the cases is a remarkable example of early Italian work (tenth century), a long rectangular casket, covered with carved bone plaques of low-relief figures and decorative bands, in a style very reminiscent of Byzantine work.

In the smaller end room, which is devoted to prints, illuminations, and miniatures, there is a very fine collection of Albert Dürer's etchings. Among the illuminations is an



WALNUT SIDEBOARD—FRENCH, SECOND HALF OF SIXTEENTH CENTURY—IN THE SALTING COLLECTION AT SOUTH KENSINGTON.

exquisite page from a "Book of Hours," dated 1480, and two fine and unusual examples of Persian illumination.

Room 128, which precedes the one of which we have been speaking, contains a remarkable collection of more than 120 small Italian bronzes, among which may be especially mentioned two bronze sphinxes by Andrea Briosco, called "Il Riccio," of early sixteenth century date. Among the other contents of this gallery are a splendid collection of engraved medals; and a number of examples of Hispano-Moresque ware, and of various schools of Italian majolica.

Perhaps the most remarkable part of the collection, however, for extent and completeness, is that of the Chinese pottery in the second floor gallery. To be sure, in point of real artistic style, a first-class piece of Italian or French Renaissance work (such as the coffer before referred to) is worth more than anything Chinese art could produce; but the combined effect of this multitudinous collection of Oriental pottery, of all shapes and colours, is truly remarkable. There are a considerable number also of very beautiful examples of Japanese lacquer-work, which also is superior to anything produced by Chinese art; but the collection of these is not so large and complete as that of the Chinese porcelain.

Altogether, this is a most valuable addition to the art-treasures of the nation, and one which affords material for prolonged study and enjoyment.

The New Royal Academician.

WE presume that since Mr. Parsons, the well-known landscape painter, has been an Associate of the Royal Academy for a good many years, his elevation to the higher rank of R.A. followed according to the usual ordering of things. Mr. Parsons is essentially a popular landscape painter, and the election will therefore no doubt be a popular one. Mr. Parsons has thoroughly mastered one particular effect in landscape composition, and his pictures are always clever and effective in their way, although they may not invariably make an irresistible appeal to those who regard landscape painting as a form of poetic expression.

The New York Fire.

THE appalling loss of life in the fire which occurred in a ten-storey factory building in New York on Saturday last, when more than 150 persons were killed, will in due course be the subject of a full enquiry, but meanwhile, in the almost fierce apportionment of blame for the catastrophe, the system of construction seems likely to suffer from abuse and distrust, which, in fairness to it, should be dispelled without delay. We are not in possession of full particulars at the time of writing, but it appears that the building was a modern one, and as it had been passed quite recently as "fireproof," we assume it was either of reinforced concrete, or constructed with a steel frame, with concrete or tile filling for floors and walls, and, probably, a stone façade. The terrible result of the fire, however, was in no way due to the form of construction: in fact, the reverse is the case, as the building itself withstood the fire in an excellent manner, the inflammable contents of three upper floors having burnt themselves out without serious injury to the fabric. The whole blame must be ascribed to the want of adequate means of escape. No outside fire escapes were provided, and the only emergency exit was a frail single ladder, leading down a narrow air-shaft, which was soon insufficient to cope with the mass of panic-stricken people who rushed to descend. It is stated in the newspapers that "the architects and city beautifiers objected to fire escapes being fixed to the front of factory buildings because of their unsightliness." If that is so, we can only deplore that the New York regulations make such a thing possible; certainly in London the claims of æsthetic effect are not allowed to over-rule the provision of what is imperative to the safety of life. But, apart from that aspect of the matter, we have particularly in mind at the moment the need for something to be said in defence of the system of

building. There are many people who, because this has been termed a "fireproof" structure, will begin at once to decry all modern methods of building. This is both wrong and unfair. The "fireproof" building of to-day is, so far as its fabric is concerned, a far safer place to be in than was the old-fashioned office structure. And in a case like the present one there is need to raise a voice in protest against wholesale blame being laid on a system of construction which, in this same instance, has actually proved its excellence.

The Architectural Association Sketch-Book.

THE latest issue of this time-honoured sketch-book is unquestionably a very good number.

The title-page is decorated with a powerful drawing by Mr. Benslyn, of a German goblet, and cover, from the South Kensington Museum, in imitation of castellated walls, with a citadel on the top; an odd piece of very bad art, since the feet are formed by small buildings, which seem completely crushed under the rest of the object. It was worth drawing, however, as a curiosity.

There is the usual variety, both of subject and method of execution, in the general contents. English work occupies half the output, commencing with measured drawings (by Mr. Swindells) of Berwick Hall, Lancashire, one of the late sixteenth century mansions in which Gothic and Classic details are mingled. Mr. Hepworth's sheets of drawings of the Abbey Gateway, Bury St. Edmunds, take us back pleasantly to the days of Bowman or Crowther, and such other publications of the Gothic revival, from which we come at one bound to the solid and dignified Classic of Trinity College Library, an excellent perspective by Mr. Carus Wilson; and thence to Ely Cathedral, by Mr. Griggs. There is something for every school of architectural preference. Mr. Lishman's brown-tinted view in Canterbury Cathedral is rather wanting in precision, or else it has not reproduced very well.

Mr. Whitelaw may be complimented on his excellent series of drawings of the Wellington Monument, the details of which have not been much drawn; they are not quite as good as the general conception of the monument, even Stevens having something of the traditional weakness of sculptors in architectural detail. Mr. Poley has made some beautifully finished drawings of the west front of St. Paul's, without the beautiful cupolas, the omission of which gives rather an unhappy effect to the general elevation; but the details of the architecture are beautifully shown.

In foreign work we notice with interest the drawings of the Carnavalet Museum at Paris (formerly Mme. de Sevigné's house), so little known in London. It is a very refined example of the French seventeenth century town mansion, especially in the design of the interior courtyard, with its charming sculptured figures between the first-floor windows. But perhaps what more than anything else give a special value to the present issue of the sketch book are the two sets of illustrations of SS. Sergius and Bacchus, by Mr. Henderson, and S. Sophia, by Mr. Fulton. The first-named set shows complete plans and sections of this historic church, with constructive sections showing the structure, and a perspective sketch of the brick dome. Mr. Henderson follows with complete plans and sections of the greater church of which S. Sergius was the architectural forerunner. These two sets of drawings from quite an epitome of Byzantine architecture, except the element of colour; very important certainly in this case.

As an example of the contents of the Sketch-book we have reproduced Mr. Walter L. Clark's elevation, section, and plans of St. Bride's steeple. The aspect of the steeple is familiar to all Londoners, but we do not think its section is; and even in regard to the exterior it may be useful to encourage a little more careful consideration of the manner in which the various stages of this original and refined design have been worked out and proportioned.

We may congratulate the editors—Messrs. G. C. Horsley, Theodore Fyfe, and W. Curtis Green—on a very good issue,

WIND PRESSURE ON ROOFS.

BY P. J. WALDRAM.

The subject of wind pressure has received much attention from scientists, but unfortunately most of the results arrived at have been deduced from the maxima records of small isolated anemometers, and more recent experiments upon large boards tend to show that the maximum pressure upon a small surface is likely to be very considerably higher than the maximum pressure over a larger surface, whether the smaller surface form a part of the larger or not.

This probably explains why buildings designed to withstand wind pressures of 40lbs. or 50lbs. per foot super. (a very common assumption in ordinary practice) are frequently so much more massive, expensive, and ugly than mediæval buildings of the same class, which were designed before anemometers were invented, and upon the bases of experience only; but which, it is not uninstrusive to note, are still standing after the storms of centuries.

The author would be the last to advocate the relaxation of rules which have been found to be safe—but the assumption of wind pressures of over 30lbs. horizontal in England over large roof areas has no reliable scientific basis; it is contrary to the results of years of record in a most exposed situation—the Forth Bridge—and it cannot be reconciled with ordinary experience.

If a factor of safety of 4 be used, it can hardly be necessary to provide for any greater wind pressure than one which would produce effects of a distinctly unusual character. This would leave a margin of 100 per cent. between an exceptional wind, acting at very brief and infrequent intervals, and such a wind pressure as would cause the elastic limit to be reached in the materials of a structure resisting it. It is sometimes suggested that wind pressures, being a live load, should be doubled in order to obtain the true effect of a live load. But every assumed wind pressure can only be deduced from the effects of wind on materials, and the suggestion that it must be doubled in order to arrive at itself is merely ridiculous.

The effects of unusually high winds in this country may be studied in the overturning of railway carriages and the destruction of walls and chimneys, whilst the effects of wind pressure on pedestrians and upon doors are also instructive.

The overturning of railway carriages can scarcely be considered as of frequent occurrence, and the moment of stability of carriages which have been overturned has been found to have been sufficiently high to have necessitated a pressure equivalent to about 30lbs. per foot super. on the windward side of the carriage, if any negative pressure or suction on the leeward side be neglected, but this negative pressure would probably form $\frac{1}{2}$ to $\frac{1}{3}$ the total overturning moment. The fact that lighter carriages in the same train have kept to the rails is additional proof of the local character of unusual gusts.

In every town, almost in every street, can be found examples of old walls and chimneys which must inevitably have blown over had they been at any period of their existence subjected to pressures far less than this. Take the case of a gin. garden wall, 7ft. high, built with lime mortar. The tenacity of such mortar is practically nil, the wall standing by virtue of its moment of stability alone. This would be $7 \times 0.75 \times 0.375 \times 112$ lbs. per foot run of wall, and the overturning moment of a wind pressure of x lbs. per

foot super. would be 7×3.5 foot lbs. per foot run of wall.

The wall would therefore be blown down at any pressure exceeding $\frac{7 \times 0.75 \times 0.375 \times 112}{7 \times 3.5} = 9$ lbs. per ft. super.

A brick chimney, one flue (18ins.) thick, weighs, with the flues deducted, about $\frac{3}{4}$ cwt. per foot cube, and would presumably be safe if built according to the rules of the London Building Act, viz., to a height of six times its base or 9ft. The joints of such a chimney would be even weaker than those of a gin. wall. Its moment of stability would be $84 \times 1.5 \times 1.0 \times 9 \times 0.75$ ft. lbs. per foot run, and the pressure per foot super. on one face which would overturn it would be $\frac{84 \times 1.5 \times 1.0 \times 9 \times 0.75}{9 \times 1.0 \times 4.5} = 21$ lbs. per ft. super.

It is a well known fact that the negative pressure or suction on the lee side of a surface exposed to wind may equal or even exceed the direct pressure on the windward side, so that direct pressures of 5 to 10 lbs. might well suffice to overturn such walls and chimneys. A wind which would blow over a strong man weighing say 150lbs., and leaning forward with his legs braced so as to gain an effective base of say 1ft. 6in., might fairly be regarded as exceptional. The body, head, and legs of such a man would present a surface of about 8 square feet to the wind, and the centre of gravity of that projected surface would be about 3.6 ft. above the feet. The effect of any negative suction at the back would be about equal to the relief afforded by the somewhat curved nature of the projected surface. The greatest wind pressure which such a man could stand up to would therefore be $\frac{150 \times 1.5}{8 \times 3.6}$ or 78lbs. per foot super.

Another fair example of exceptional gale would be one against which a powerful man could not open an ordinary door when using all his force. The limit of horizontal push which a powerful man can exert at chest level has been found to be about 35lbs.

An ordinary door would present a surface of 20ft. super., and half of any pressure on this surface would be borne by the hinges on the door being pushed open. There would in this case be no negative pressure to allow for, and the wind pressure which would resist the utmost efforts of a strong man would be $\frac{35 \times 2}{20}$ or $3\frac{1}{2}$ lbs. per foot super.

These homely deductions from common experience, and others of a similar nature, prepare one for some of the results which have been obtained by careful and exhaustive experiment at the National Physical Laboratory upon the relation between wind velocity and pressure. (See Proc. Inst. C.E., Vol. clxxi.).

These may be summarised as follows:—

Velocity in miles per hour.	Pressure per ft. sq. in lbs.	Remarks.
10.	0.32	Gentle
20	1.28	Light breeze
30	2.88	Moderate wind.
40	5.12	High wind.
50	8.00	Gale
60	11.52	Storm
70	15.68	Heavy storm
80	20.48	Violent storm
90	25.92	Hurricane
100	32.00	Violent hurricane
120	46.08	—
140	62.72	—

When a wind pressure of only 8lbs. per foot super. is regarded as that produced

by a gale of 50 miles an hour—one which would overturn ordinary weak walls and chimneys, blow down chimney pots wholesale, blow strong heavy men over, and prevent two strong men from opening an ordinary door—then our preconceived ideas of wind pressures are apt to appear a little out of proportion, to say the least. It does not therefore require much scientific investigation or mathematical deduction to understand why buttresses designed to meet uniform wind pressures of say 50lbs. per foot look decidedly clumsy when compared with those designed by the simple rule of thumb of the mediæval builder.

Moreover, natural wind pressure does not exert its maximum force over all portions of say a large roof at the same time; and the author suggests that at least for buildings in ordinary situations it is sufficient to assume a steady wind pressure of 30lbs. per square foot on any area of 300 sq. feet and under, and to reduce this by 1lb. per square foot for every 100 sq. feet in excess of 300 to a minimum of 20lbs. per sq. foot.

The effect of wind on the underside of open shed roofs must of course be considered in addition.

The principle of a 30lb. wind is accepted in the London Building Act, 1909, and is in accordance with the building laws of large Continental and American cities.

ARCHITECT, BUILDER, AND CLIENT.

SOME LACONICS AND A COMMENTARY.

A note in the Journal of February 22nd, on "Responsibility for Dry Rot," having drawn important letters from representative builders, the opinions of a representative architect on the general question of responsibility for building works will be read with much interest. Mr. Paul Ogden, F.R.I.B.A., having no time for the elaboration of his views on the subject, has favoured us with a few rough notes which have the merits as well as the unavoidable shortcomings of the laconic style. They are pungent and pithy, but, on the other hand, they occasionally seem to lack development and explanation. It is perhaps in recognition of this fact that Mr. Ogden has in several instances preferred not to make a definite dogmatic statement, but, in the manner of Socrates, to ask a pertinent question. He asks, for instance, "Is it not a physical impossibility for an architect to superintend the whole of the works?" where, of course, the answer would depend very much on the meaning attached to the word "superintend." Mr. Justice Channell, in his judgment in Leicester Board of Guardians v. Trollope, supplied an authoritative answer: "He did not think there was any difficulty in saying what the respective functions and duties of architect and clerk of works were. He had a clear idea himself, and the witness who had been called practically agreed, that in all matters of detail the clerk of works had to see to it. Everybody knew that the architect could not be on the works all the time; and everybody knew that the clerk of works was appointed to protect the interests of the employer against the builder." It is recognised that this is not a complete answer to Mr. Ogden's rather far-reaching question; and that, in particular, it does not solve the problem of the architect's responsibility for the conduct of the clerk of works.

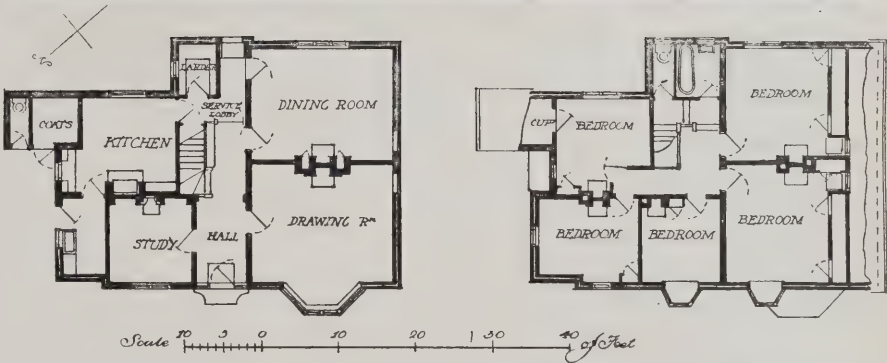
Mr. Ogden's next observation implies, again, much more than it expresses: "Assuming that an architect visits the work half a day a week—that is, one-tenth of the time the foreman who represents the builder—the builder's foreman has ten times the opportunity of seeing that the contract is carried out." It is perhaps not a fair inference that the onus on the builder is therefore ten times greater than that on the architect, but rather that the former's tenfold opportunities should be taken into account when the merits of rival cases are being judicially weighed in the courts.

The next question is one to which may perhaps be applied the accepted phrase, "a legal poser": "Is it not possible to strain the law to bring an action for fraud against the builder should he not carry out the contract according to the specification?" If the deviations were made in good faith, there would be no desire to "strain" anything but "the quality of mercy"; and if they were otherwise the law would surely supply a remedy without any necessity for the application of extraordinary stress. But in any case it may be supposed that the architect had taken all reasonable means of ascertaining that the specification was duly followed, otherwise it might be only too easy to assume that, having neglected proper supervision, he would be in some degree responsible for the fraud.

Those points that may be here passed over without any further comment than that they appear to insist rather strongly on the architect's point of view, are: (a) "An architect is *prima facie* employed to prepare a design and to see such design carried out. (b) Assuming the builder to be an honest man, no supervision would be necessary—merely visits for consultation and explanations where drawings need such. (c) By custom, and owing to indifferent builders, specifications have had to be prepared to make more clear the knowledge that a good builder should possess, or owing to the client requiring something less than the best."

When Mr Ogden goes on to declare that it is "owing to bad builders in a general sense that the building agreement or contract, with its multitudinous clauses against fraud, has become essential," he does but echo the aphorism that "laws are made for the restraint of the wicked." His next question is: "If clients insist upon competition, which is an incipient means of producing inferior work and cheap work, should not the responsibility be that of the client?" This might furnish forth sufficient ethical and psychological material for a new dialogue of Plato. Provisionally, and very imperfectly, the question might be answered by another. Are not the architect and the builder consenting parties, and therefore on the same plane as the client? To pursue the enquiry would be to forsake the solid earth of practical affairs and to soar into the ether of refined metaphysics.

Yet another question appears, at all events in part, to belong also to the supermundane category: "Is there no way by which architects and builders and clients may be brought to appreciate mutual difficulties and responsibilities?—that is, if a client requires a cheap and jerry building, should not the corresponding risks be those of the client?" There is no doubt an element of practicality in this question; though a right answer to it would involve the unmasking of one of the little hypocrisies with which human affairs are beset at every turn. But it requires more than the average endowment of courage and strength to be able



The 9-in. cavity walls are partly covered with rough-cast. The cost worked out at just over 6d. a foot cube, including everything except fences. Mr. Edwards, Canterbury, was the builder.
"ST. DUNSTAN'S," CANTERBURY. LOVEGROVE AND PAPWORTH, ARCHITECTS.

to acknowledge candidly to oneself that any piece of work upon which one happens to be engaged is of the cheap and nasty order, and still more courage and strength to obtrude this acknowledgment on the notice of all concerned with a view to the due apportionment of the responsibilities accruing. There is no doubt that the right attitude is suggested; but, "who is sufficient for these things?"

Mr. Ogden's extremely interesting notes conclude with an alluring formulary: "The ideal position, when no risks would be run, is one in which there would be no contract; the work would be done by selected workmen, and there would be a good design, and the builder would be paid ten per cent. on the time and material required. Such matters as dry rot, when accepted precautions have been taken, and similar matters, would be accepted as ordinary building risks." Concerning which there is nothing to be said except "How charming is divine philosophy!"

Prevention of Decay of Stone Buildings.

What is stated to be an effective preparation for the prevention of the scaling of sandstone or freestone buildings is being put on the market by the National Property Restoration and Decorative Co., Glasgow. The preparation may be made up in any colour, and it is claimed that it is proof against damp fire, and germs.

PICTURE EXHIBITIONS.

Institute of Painters in Water-Colours.

There is, of course, a great deal of competent work in this large collection of water-colour drawings: the misfortune is that so few of them rise above the level of the conventional in art, and that some of them hardly escape the charge of vulgarity.

Among the figure pictures it is of some interest to find that one of the ablest members, Mr. John White, whom we have hitherto known as a landscape painter, has a scene on a railway platform, "Going to London," in which the study of characteristic types of rural population is the main interest, and the artist shows as well here as he does in landscape. Among figure pictures of real character are Mr. Grundy's "In Disgrace" and Professor Bartels's study of a Dutch peasant girl, "Autumn Morning on the Dutch Heather," a picture of real character and originality. Miss Gloag's "The Chinese Workbox" and "Diana protected by her Nymphs" are clever works of the type in which effect of colour and composition is the object, rather than the illustration of any incident. Mr. Hal Hurst's pictures may come into the same category, perhaps, but not with the same success. They are what the French would call *cliquant*.

Among landscapes there are some really fine things, Mr. Spenlove's "The Herald of Night," for instance, though (as is so often the case in pictures) the moon is too large for the general scale of the landscape. Mr. Oswald Garside has made a really fine composition out of "Strand-on-the-Green," with the half-furled sail and its reflection making a strong vertical light in the composition, which is quite true as to the facts of the scene, the bank-side cottages being even recognisable. Mr. Arthur Severn's "A Sunlit Haze," a sea-side picture on a large scale, is a very fine and successful study of effect of light and atmosphere. Among other fine landscapes are Mr. Haité's "An English Cornfield"; Mr. Frank Walton's "St. Ives Bay," with a delicious foreground of flowers; Mr. Swanwick's "The Sussex Downs"; and Mr. George Marks's really beautiful work "Gorse," which ought to have been hung on the line, where many far inferior things are placed to greater advantage. In sea-pieces the exhibition is strong, as may be supposed when it includes several works by Mr. J. R. Reid and Mr. David Green; the latter artist's "Silver Sheen," fishing-boats running into harbour in the early morning light, is a masterly work.

There are a good many architectural pictures, among which Mr. Talbot Hughes's large view of the Temple of Deir-el-Bahari enables one to realise the strange effect of this immense composition of terraces and colonnades, looking almost like a toy building in an embayment of the vast cliffs of barren sandstone. Mr. Babb paints the "Sole Relic of Ancient Corinth," the thick archaic columns of the well-known fragment of a Doric Temple; Mr. Duménil gives us a good interior of St. Mark's; Mr. Thomas Macquoid paints the façade of Lucca cathedral; Mr. Mavrogordato the remains of the Jupiter Temple at Athens; and Mr. Max Ludby's "The Two Gables" is a good study of a bit of unsophisticated rural architecture.

The Leicester Gallery.

Mr. Walter Severn, who exhibits a collection of landscapes in water-colour at this gallery, has been rather too fond of attempting what one may call out-of-the-way scenic effects of nature, some of which, in his drawings, have given us the impression of being rather unreal. The present collection, however, shows nothing exaggerated, and contains some fine studies of landscape effect, on subjects so various as "Rough Sea at Hastings," and "Warwick Square in Snow," both of which are carefully treated. The figure in the view of the Taj Mahal must surely be too large in scale. Another room in the same gallery contains a collection of pictures of "The King's Navy," by Mr. Wyllie, which are interesting both historically and artistically. Mr. Wyllie is one of the few painters who can represent both sea and ships equally well. It is almost needless to say that he gets his most picturesque effects from the old sailing men-of-war. "Dreadnoughts" are (one hopes) efficient fighting ships, but they are certainly not beautiful.

INSTITUTE OF BUILDERS.

The 27th annual general meeting of the Institute of Builders was held at Koh-i-Noor House, Kingsway, W.C., on Wednesday, March 15th.

The audited accounts and balance sheets for the Institute General and Benevolent Funds for the year ending December 31st, 1910, together with the report of the Council, were adopted.

The Council, in submitting its twenty-seventh annual report, regrets that the prosperity of the country generally has not yet greatly improved the building trade. Representatives from the Council attended several sittings of a joint conference held under the auspices of the Royal Institute of British Architects, on the subject of the proposed London County Council regulations concerning reinforced concrete construction, and the recommendations of that conference have been forwarded to the L.C.C. Although the proceedings of the past year in Parliament were, for political reasons, somewhat quiet, the trade representatives on the Employers' Parliamentary Council have maintained their vigilance in respect to the interests of building trade employers. At the instance of the L.C.C. Education Authority, the Council has formulated a scheme with a view to the encouragement of the formal apprenticeship of lads from elementary schools who are likely to make good mechanics. It is hoped that the suggestions made may lead to a better supply of capable workmen, and tend to reduce the redundancy of unskilled labour in the future. A committee of this Council is considering the question of the position of the principal contractor with respect to sub-contractors under the Agreed Form of Contract, and hopes, in due course, to formulate proposals for alterations to the clauses bearing on the subject, which will be subsequently submitted to the Royal Institute of British Architects. Four lectures on subjects connected with the building industry have been delivered during the past winter, and have been greatly appreciated by all those who heard them. The grateful thanks of the Institute are due to the gentlemen who so kindly placed their experience and talents at its disposal, viz., Mr. Moritz Kahn, Mr. H. Franklyn Murrell, A.R.I.B.A., Prof. Beresford Pite, F.R.I.B.A., and Mr. James S. Holliday. The thanks of the Institute are due to their representatives acting as Examiners in Technology—Messrs. Fred. Higgs, F. G. Rice, G. Bird Godson, and Edmond J. Hill. The Council regrets that the medals in brickwork and masonry which were offered at the South Kensington Technological Examination could not be awarded, owing to there being no entries for the practical examination in either of those trades. The carpenters' medals and money prizes, however, were duly awarded, and, in addition, a special gold medal was placed at the disposal of the Carpenters' Company in connection with their examinations in carpentry and joinery. Occupation of the new offices, Koh-i-Noor House, Kingsway, W.C., took place in September, and the improved accommodation is much appreciated by the staff and by all who use them. Members are invited to make use of the rooms for the purpose of appointments, consultations, or arbitrations. Grants amounting in all to £81 10s. have been made to the Builders' Benevolent Institution, the Builders' Clerks' Benevolent Institution, the Provident Institution of Builders' Foremen and Clerks of Works, and the Builders' Foremen's Association. It was with deep regret that the Council learned of the death of the late Mr. J.

Howard Colls, and they desire to put on record the sense of loss that they have thereby sustained and their appreciation of the talents and character of their late respected colleague.

The following officers, etc., were elected for the ensuing year:— President, Mr. James S. Holliday (Messrs. Holliday and Greenwood, Ltd.); Vice-President, Mr. F. G. Rice (Messrs. Rice and Son); Treasurer, Mr. Jas. Carmichael, J.P.; Hon. Auditor, Mr. G. C. Hudson (Messrs. Hudson Bros.). To fill vacancies on the Executive Council—Mr. Walter Lawrence, junr. (Messrs. Walter Lawrence and Sons); Mr. Ralph J. Holliday (Messrs. Holliday and Greenwood, Ltd.); Mr. Samuel Smethurst, J.P. (Messrs. S. and J. Smethurst, Ltd., Oldham); Mr. Edmond J. Hill (Messrs. Higgs and Hill, Ltd.).

A very hearty vote of thanks was passed to Mr. Fredk. Higgs (Messrs. F. and H. F. Higgs) for his able and energetic discharge of the duties attached to his office of President during the last twelve months.

Votes of thanks were also given to the Treasurer (Mr. Joseph Randall), and to the Hon. Auditors (Mr. F. N. Cowlin, of Messrs. Cowlin and Son, Bristol, and Mr. Eric M. May, of Messrs. W. Cubitt and Co.).

LEGAL CASES.

A Damp Party Wall.

Two appeal cases concerning dampness in a party wall came before the King's Bench Division on Wednesday last. The plaintiff, Miss Minturn, was the freeholder of No. 14, Chelsea Embankment, and the defendants were Sir John Wolfe Barry (tenant), and the London County Council (freeholders) of the adjoining house. The question was whether the party wall between the two houses was defective because it allowed damp to penetrate. The Deputy Judge of the Brompton County Court, from whose decision the appeals were lodged, had decided in favour of the defendants. The plaintiff appealed, and Mr. Justice Phillimore and Mr. Justice Bankes allowed the appeal, holding that dampness in sufficient quantity rendered a party wall defective within the meaning of Section 88 of the London Building Act. They therefore remitted the case to the County Court for a consideration of the work necessary to be executed.

Defrauding an Architect.

At Bow Street, last week, before Mr. Marsham, William Horace Nevell, of Wimbledon Park, was charged with obtaining money by false pretences from Mr. William Simmonds, an architect and surveyor, of John Street, Adelphi. The prosecutor stated that he knew Nevell about five years ago, when he held a responsible position in an architect's office. In December last Nevell called upon him and represented that he had commenced to practise for himself, and that he had obtained some good commissions. He produced drawings bearing signatures of two well-known noblemen, and it was understood that the witness was to be appointed quantity surveyor for the proposed work. Upon the strength of these and similar representations Nevell obtained from the witness various sums of money amounting in all to about £45. Detective-sergeant Crutchett said that the drawings produced to the prosecutor were stolen from the office of a large firm of contractors where Nevell was formerly employed.—The prisoner was sentenced to six months' imprisonment in the second division.

Mr. J. Savage, Quantity Surveyor, 1, Mosley Street, Newcastle-on-Tyne, announces that he has taken into partnership Mr. A. E. P. Rowe, who has acted as his chief assistant for upwards of ten years. The practice will continue to be carried on at the above address, and under the style of Savage and Rowe.

DETAILS—OLD AND NEW.—II.



SOLOM'S COURT, SURREY: DETAIL OF GABLE WITH BAY WINDOWS. E. GUY DAWBER, F.R.I.B.A., ARCHITECT.

SOLOM'S COVRT.
SURFEY
Detail of Dining Room Bay.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



E. GUY DAWBER, F.R.I.B.A., ARCHITECT.

NEWS ITEMS.

A New A.R.S.A.

Mr. Alexander N. Paterson, F.R.I.B.A., has been elected an Associate of the Royal Scottish Academy.

Old Devon Churches.

The second volume of "Some Old Devon Churches," by John Stabb, will be published next month by Simpkin, Marshall and Co., Ltd., price 7s. 6d. net.

Proposed Addition to King's School, Rochester.

It is proposed to add to the King's School, Rochester, a large hall, a gymnasium, a swimming bath, and a fives court at a cost of £6,000 or £7,000.

Restoration of Hurstmonceaux Castle.

Hurstmonceaux Castle, Sussex, is being restored and made habitable by the present owner, Mr. Claude Lowther. The castle was built by Sir Roger de Fiennes in the time of Henry VI. It became much decayed towards the end of the eighteenth century, and was then gutted to supply material for Hurstmonceaux Place. From that time until the present day it has been a mere shell, but still an interesting specimen of the fortified mansion of its period.

Berkhamsted School Extension.

On March 18th Lord George Hamilton opened a new hall and junior school which have been added to Berkhamsted Public School, at a cost of £10,000. In the hall there is seating accommodation for 500 boys on the ground floor. The architect was Mr. N. A. Rew, and the builders were Messrs. Honour, of Tring. Berkhamsted School was founded in the sixteenth century, and the old school is still standing, but is not large enough for present requirements. The boys now number 460, and the school officers' training corps about 200.

British Pavilion at Rome.

The British Palace at the International Fine Arts Exhibition now open at Rome has been designed by Mr. E. L. Lutyens, F.R.I.B.A. It is an adaptation of the upper Order in the façade of St. Paul's Cathedral. The building is raised upon a podium prolonged for 33ft. on either side to accommodate the extremities of the two flanking 165ft. terraces, whereon are the models by Mr. Brock of his two heroic groups of "Truth" and "Justice" for the Queen Victoria Memorial.

New Town Planning Schemes.

It is understood that the Local Government Board have given authority for the preparation of two further town-planning schemes, under the Housing, Town Planning, etc., Act, 1909. The schemes are to be prepared by the Corporation of Birmingham and the Urban District Council of Ruislip-Northwood. In the case of Birmingham, sanction had previously been given to the preparation of a scheme in relation to over 2,300 acres in the parishes of Quinton, Harborne, Edgbaston, and Northfield, and the further scheme is to apply to an area of about 1,450 acres in the parish of Aston, on the east side of the city. In the case of Ruislip-Northwood the scheme is to extend to a little over 5,900 acres, a small part of which is

outside the district and in the neighbouring parish of Rickmansworth Rural, in the rural district of Watford.

Architectural Association "House List."

The house list of the Architectural Association for Session 1911-12 includes the following nominations:—President, Mr. Gerald C. Horsley; Vice-Presidents, Mr. W. Curtis Green, Mr. W. J. Tapper; Hon. Treasurer, Mr. Arthur Keen; Hon. Editor "A. A. Journal," Mr. P. Cart de Lafontaine; Hon. Librarian, Mr. W. H. Ward; Hon. Secretary, Mr. Herbert A. Hall. Nominations for officers or ordinary members of the Council may be made by members at the next Ordinary General Meeting, on April 3rd, in accordance with By-law 33.

Architectural Partnership.

Mr. Chas. FitzRoy Doll, F.R.I.B.A., F.S.I., J.P., has taken his eldest son, Mr. Christian C. T. Doll, M.A. (Cantab.) into partnership, and the firm will be known as C. FitzRoy Doll and Son. Mr. C. C. T. Doll was educated at Charterhouse and Trinity College, Cambridge. After serving his articles with his father he was selected as the architectural student at the British School at Athens. Later he assisted Dr. A. J. Evans, F.R.S., F.S.A., etc., with the excavations of the Palace and Tombs, etc., at Knossos, Crete. Amongst other works he designed and superintended the erection (by native workmen) of Dr. Evans's house at Knossos.

London Tradesmen and L.C.C. Bill.

A deputation representing London tradesmen waited on the L.C.C. Legal and Parliamentary Committee recently to protest against certain provisions in the General Powers (1911) Bill. Among other matters it was contended that Clause 19, in regard to overhanging lamps and blinds, was distinctly onerous. The police had full powers to deal with any structure or fitment extending beyond the building line, and as the Bill did not displace that authority there would be dual powers which would be conflicting and lead to undue restrictions. It was also claimed that sub-section 6 of Clause 19, enacting that no shop blind should extend over any part of the public way less than 2 ft. from the carriage way, was quite unnecessary.

London's Statues.

Lecturing last week at the Royal Photographic Society on the subject of open-air statues in London, Mr. F. W. Hill said that Royal personages were honoured with between thirty and forty statues in the metropolis; public servants and statesmen in thirty; soldiers and sailors in fifteen; literary and scientific men in two dozen; while artists and philanthropists had six each, and unclassified persons, including leaders in religious and social movements, had twelve. Of the early English Kings there was only one statue, that of Alfred the Great in Trinity Square, Southwark. The oldest statue in London was probably that of Queen Elizabeth at St. Dunstan's, in Fleet Street, and the first equestrian statue that of Charles I. at Charing Cross. Queen Victoria had four statues, the late King had three, and Queen Alexandra one (in the grounds of the London Hospital). Until the recent unveiling of the Irving statue Mrs. Siddons was the only player thus commemorated. Many of the statues were in modern costumes, but the Waterlow statue in Waterlow Park was the only one that had an umbrella.

IN PARLIAMENT.

(By our Press Gallery Representative.)

The Calcutta Improvement Scheme.

Mr. Montagu, Under Secretary for India, has informed the Earl of Ronaldshay that the Calcutta improvement scheme contemplates a net outlay of about £3,240,000. Towards this the Government of India have contributed a cash grant of £330,000. The balance will be raised by loans having a currency of 60 years, and for which an annual revenue of about £150,000 for 60 years will be required. Of this the Government will contribute £10,000 a year, about £83,000 will be realised from jute and other special taxes, £37,000 will be contributed by the Calcutta Municipal Corporation, and £20,000 is estimated to accrue from rents of improved lands.

Redford Barracks.

Mr. Haldane some days ago stated in answer to Major Anstruther Gray that 107 men were employed on the preliminary work at Redford Barracks, near Edinburgh. The cavalry barracks it was hoped would be completed by midsummer, 1913, and the infantry barracks by midsummer, 1914.

Imported Joinery Work and Unemployment.

The President of the Board of Trade has furnished the following table in accordance with a request by Mr. Kellaway:—Table showing the value of wooden house frames, fittings, and joiners' work imported into the United Kingdom, and the percentage unemployed among trade union carpenters and joiners in the United Kingdom, in each of the years 1900-10:—

Year.	Value of Imported Joinery.	Percentage returned as unemployed among Carpenters and Joiners.
	£	Per cent.
1900	1,195,314	2.2
1901	1,153,759	3.3
1902	1,145,154	3.8
1903	469,227	4.5
1904	332,627	7.3
1905	317,288	8.0
1906	272,949	6.9
1907	224,596	7.2
1908	209,632	11.3
1909	185,487	11.5
1910	205,428	8.2

Ancient Monuments.

Mr. Dudley Ward, on behalf of the First Commissioner of Works, stated, in reply to Mr. Whitehouse, that the Government had not lost sight of the recommendation of the Royal Commission on Ancient Monuments that the Office of Works, acting through the inspector of ancient monuments or a special advisory committee, should offer suggestions where necessary to local authorities or private owners for the better care of ancient monuments and buildings reported upon by the Royal Commission. The First Commissioner, however, feared that the time had not yet arrived for making any further statement upon the subject.

Mr. Noel Buxton asked whether the Government would consider the extension of the terms of reference of the Royal Commission so as to include the question of preserving ancient monuments by any methods, legislative or other, which might be thought desirable by the Commission.

Mr. Dudley Ward replied that the First Commissioner hardly thought it would be desirable to alter the reference at present.

In reply to another question, Mr. Dudley Ward said the first annual report of the Inspector of Ancient Monuments should be

ready at the end of his first year of office, at the conclusion of the current month. The First Commissioner would then cause the report to be presented.

Scottish Historical Monuments.

Mr. Ramsay Macdonald asked the Secretary to the Treasury why only a few pages of the second report of the Royal Commission on the Ancient and Historical Monuments and Constructions of Scotland had been presented to the Houses of Parliament and not the full report and inventory; and whether it was the intention of the Treasury to withhold these reports from members and publish them only through trade channels.

Mr. Hobhouse replied that the inventory with an appendix of the report quoted related to the county of Sutherland. The report of the Royal Commission was presented to Parliament and a copy was available for every member. But the inventory, a work of unique character, appeared to fall within the category of publications that, in the judgment of the Select Committee on Publications, should not be distributed gratuitously to members, and the Treasury acted upon this view. A copy of the inventory would be found in the Library of the House. The book might be purchased from any bookseller at 6s.

Suggested Improvement at Marlborough Gate.

Sir John Rolleston asked whether the First Commissioner would consider the possibility of throwing into the public thoroughfare at Marlborough Gate so much of the St. James's Palace private garden as would enable a footway not less than 18 ft. in width to be made along the outside of the said thoroughfare, without in any degree narrowing the roadway for vehicular traffic, in order to minimise the dangers to foot-passengers at an unprotected corner, and in order to complete the monumental improvements connected with the Mall; and, if so, whether it would be possible to have this improvement completed before the Coronation procession, which was to pass this way.

Mr. Dudley Ward said the First Commissioner regretted very much that he was

unable to take this proposal into consideration at present. There was a great deal of work to be done in preparation for the Coronation, and he could not undertake anything more during the current year.

MEMORIAL TO KING EDWARD IN THE MALL.

The accompanying plan, reproduced from the "Daily Chronicle" shows the proposed site of the memorial to King Edward, to be erected in the Mall, facing Marlborough House. A new road is to be formed across St. James's Park, as indicated, and the existing bridge spanning the lake is to be replaced by one of architectural character. Mr. E. L. Lutyens, F.R.I.B.A., is mentioned as the architect for the scheme, and Mr. Bertram Mackennal, A.R.A., as the sculptor.

Viewed from the Mall, it is suggested that a few steps should lead to a platform bearing the base of the pedestal, which should be about 12ft. high. On this base, and in the centre, it is proposed to place a large seated figure of "Peace," with appropriate symbols at her feet. On either side would be two processional groups, while centrally placed on a pedestal would be the statue of King Edward VII. in Garter robes, the total height of the memorial being about 50ft.

With regard to cost, £30,000 has been given as an estimate for the central monument, and £20,000 for the bridge and the intervening space and the foundations of the memorial.

The form of the memorial has not yet been definitely decided upon, but a scheme embodying the above proposals will be considered by the committee in charge of the matter at their next meeting.

COMPETITIONS.

Rochdale Nurses' Home.

Members and Licentiates of the Royal Institute of British Architects are requested not to take part in the above Competition.

—By order of the Council, Ian MacAlister, Secretary.

LIST OF COMPETITIONS OPEN.

MARCH 31. CHURCH, NEW CUMNOCK.—Particulars in our issue of March 7.

APRIL 1. MUNICIPAL OFFICES FOR COVENTRY.—Premiums of £150, £175, and £125 for designs for municipal offices and town hall. Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. Particulars from Geo. Sutton, Town Clerk.

APRIL 1. "OWEN JONES" COMPETITION FOR WALL-PAPER DESIGNS, etc. Designs to be submitted to the Board of Education by April 1. The competition is open to students in schools of design. Six prizes are awarded by the Society of Arts, John Street, Adelphi.

APRIL 6. SEWERAGE AND SEWAGE DISPOSAL, CARLTON.—Scheme required by Barnsley U.D.C. for a portion of the parish of Carlton. Apply to Mr. James Senior, Clerk to the Parochial Committee, Carlton, near Barnsley.

APRIL 20.—PUBLIC HALL, LEICESTER.—Competition confined to local architects. Conditions (one guinea deposit) from E. George Mawbey, M.Inst.C.E., Borough Surveyor, Town Hall, Leicester.

APRIL 20. HOSPITAL AND SCHOOL OF MEDICINE ARGENTINE.—To be erected at Rosario. Cost, about £149,000. Premiums, £1,050, £700, and £440. Copy of conditions can be seen at the Commercial Intelligence Branch, Board of Trade, 73, Basinghall Street, E.C.

MAY 1.—LIBRARY AND ART GALLERY, MANCHESTER.—For particulars apply to Manchester Corporation.

MAY 5. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250 for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea.

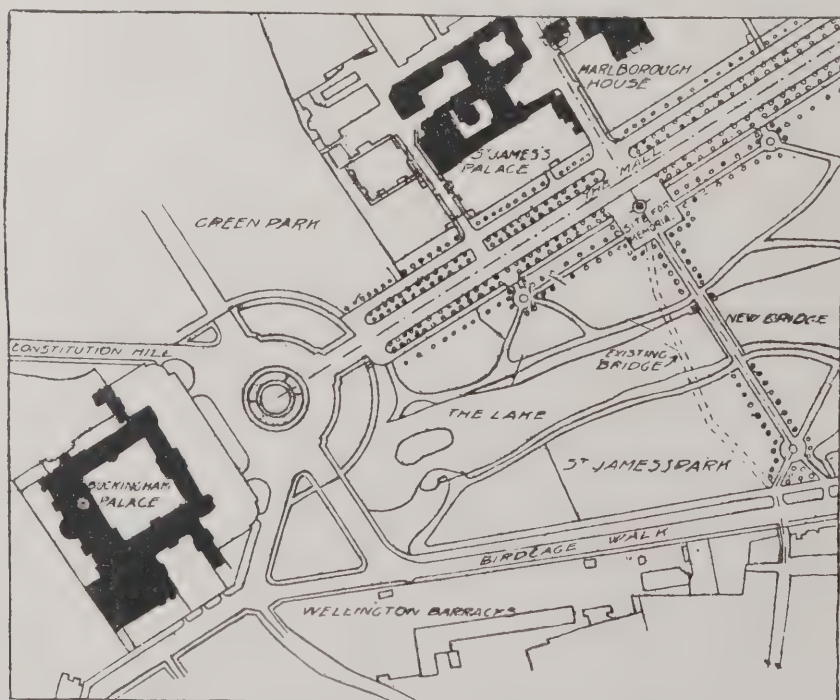
MAY 10. WARD FOR COTTAGE HOSPITAL, DEVIZES.—The ward is for six beds, and is to cost £1,200 to £1,500. Author of selected plans will be appointed architect. Premiums of ten guineas to author of second design. Particulars (10s. 6d., returnable on usual conditions) from Edward Thorp, Hon. Sec., Devizes Cottage Hospital Committee, Devizes.

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

Destruction of an Ancient Devonshire Church.

The ancient church of St. Michael, Honiton, was destroyed by fire on Sunday morning last. The church, which was in the Perpendicular style, dates from the 14th century, but was largely rebuilt towards the close of the 15th century. It contained a rood screen of early 16th century work (restored in 1880), and the marble tomb of Thomas Marwood, physician to Queen Elizabeth, who died in 1617.



PLAN SHOWING PROPOSED SCHEME FOR KING EDWARD MONUMENT IN ST. JAMES'S PARK, LONDON.



This bridge was erected a few years ago over the public road between Wadebridge and Padstow, to join up a house on one side with the main portion of the gardens on the other. The long ramp on the west side is a continuation of a garden path, and forms a pleasing feature, use being made of the higher part next the bridge for a storage place underneath. An archway cuts through the ramp about half way. The wrought ironwork over the weather recess was required to save vibration during stormy weather and to carry a lamp. The drawing was hung in last year's Royal Academy Exhibition. Mr. T. Rogers Kinsell was the architect.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

CONCRETE AND STEEL SECTION

(MONTHLY.)

Rusting of Concrete-covered Steel.

The rusting of the steel in reinforced concrete construction is, of course, a matter of vital importance. If it could be shown that the liability to rust must be regarded as a normal risk, the system would cease to be practicable. One or two instances of deterioration from this cause having been brought to the notice of the Concrete Institute, it was thought desirable to collect information upon the subject, and accordingly a circular was addressed to 560 members of the Institute, 96 municipal surveyors and engineers, 25 engineers of joint water boards and sewerage boards, 38 dock engineers, 94 railway engineers, and 187 various contractors and others who use concrete—a total of 1,000 persons. To this letter 111 replies were received giving information which the Science Standing Committee of the Concrete Institute, who have issued their draft report on the subject, considered to be extremely valuable. As the result of definite observations, twenty-six cases of rusting were described, and forty-three cases in which no rusting had been found were reported on.

Imperfect Covering.

In almost every instance, the rusting is ascribed to imperfect bedding or covering. In eye-bolts buried for fifty years in rubble-concrete blocks, there was corrosion only at spots where there was a lack of mortar. Again, in some reinforced-concrete decking near the sea, and 3 ft. above high-water level, there was some rusting where the concrete covering was less than $\frac{1}{2}$ -in., this was ascribed to poor concrete. The rusting of an iron wall-tie buried in an old brick wall in lime mortar was ascribed to the action of the lime in the mortar. In other instances rusting is ascribed to imperfections in the concrete, voids, cracks, blowholes insufficient cover, or insufficient punning or ramming. In the three worst instances of rusting the use of breeze is assigned as the cause. In most other cases the rusting was slight or partial; and in the majority of instances in which rusting occurred at all, the structure implicated was of marine or aquatic situation—piers, water-tanks, culverts, etc., occurring frequently in the list.

Resistance to Rust.

Of the cases in which no rusting was found there is little to be said. They are more numerous and more miscellaneous than the instances in which corrosion was discovered, but include many special risks—aqueducts, reservoirs, water-towers, sewers, jetties, piles in sea, pillars in river, water-pipes, etc. The age of the structure being, of course, important, it may be mentioned that no rust was found in a rail that had been buried in concrete for forty years, nor in a reinforced-concrete floor that had existed for twenty-five years, nor in the iron spikes embedded for twenty years in a concrete wall, nor in the imbedded portion of tie-bolts in a concrete sewer covering that had endured for a similar period, nor in some bridges, flags, fence-posts, an engine-bed, etc., which had also existed for a score of years. Ten, eleven, twelve, fifteen, sixteen, and seventeen years of im-

munity are also recorded; and the list—in fact, both lists—seem to justify the conclusion of the committee that "reinforced concrete will last as long as plain concrete in any situation, provided that certain special precautions are taken during its construction." The precautions recommended are enumerated, and are referred to below.

Electrolysis.

In pursuance of the enquiry, the Science Standing Committee of the Concrete Institute sent deputations to the Halling Works of the Associated Portland Cement Company, where it was found that, in a twenty-five-year-old structure consisting of an elevated steel and concrete floor resting on cast-iron columns, the protection had been perfect where the concrete had been impervious and in close contact with the metal, but that elsewhere corrosion had taken place to a greater or less extent; and to four reinforced concrete marine jetties at Southampton, where, in three instances, deterioration (due, apparently, to a special cause) was observed, while in the fourth the work was, generally speaking, in excellent condition. The special cause was, apparently, electrolytic action, set up by slight currents passing through the substance of the reinforced concrete, electric cranes being used upon the structures in question.

The Committee's Recommendations.

In their recommendations the Science Standing Committee of the Concrete Institute advise that the concrete covering should in no case be less than $\frac{1}{2}$ -in., and it is suggested that if round or square bars be used the covering should not be less than the diameter of the bar; while in structures exposed to the action of water or damp air the thickness of covering should be increased at least fifty per cent., or the size of the aggregate should be reduced so as to ensure a dense skin; and in the case of structures exposed to very severe conditions the concrete might, as an extra precaution, be covered with some impervious coating. Further recommendations are that the reinforcement pieces should be a sufficient distance apart to admit of the concrete completely surrounding every part of the steel, which latter should not be oiled or painted, and should be freed from rust by scraping and brushing; while all steel should be firmly supported to avoid displacement during the ramming process. Care should be taken to prevent electric current passing through the reinforced concrete; fresh water should be used for the mixing, and aggregates charged with salt should be washed.

Not New, but True.

The investigation, so far as it goes, cannot be said to have brought out any point that is absolutely novel, either in the data or in the deductions. It was already sufficiently established that steel encased in cement does not rust, provided the covering is impermeable to moisture; and the effect of electrolysis was pretty generally known. The Committee, however, must in justice be credited with having shown very useful vigilance in opposing with definitely

ascertained facts the vague rumours which, if allowed to go unchecked, might operate very detrimentally on public opinion by disseminating erroneous ideas as to the stability of reinforced concrete structures. It is well, therefore, to meet reiterated fallacies with a restatement of actual facts, which is all that, on the present occasion, the Institute seems to have attempted; for although the instances are new, the principles they illuminate are elementary and commonplace. But a good purpose is certainly served by repeating them as often and as forcibly as may appear to be necessary for the vindication of a system of building which has had to fight every inch of its way to the modicum of popularity that it now enjoys, and which must not be allowed to lose ground for want of vigorous and persistent advocacy. The Institute may be congratulated on the alertness and thoroughness with which it is addressing itself to this very necessary educative work.

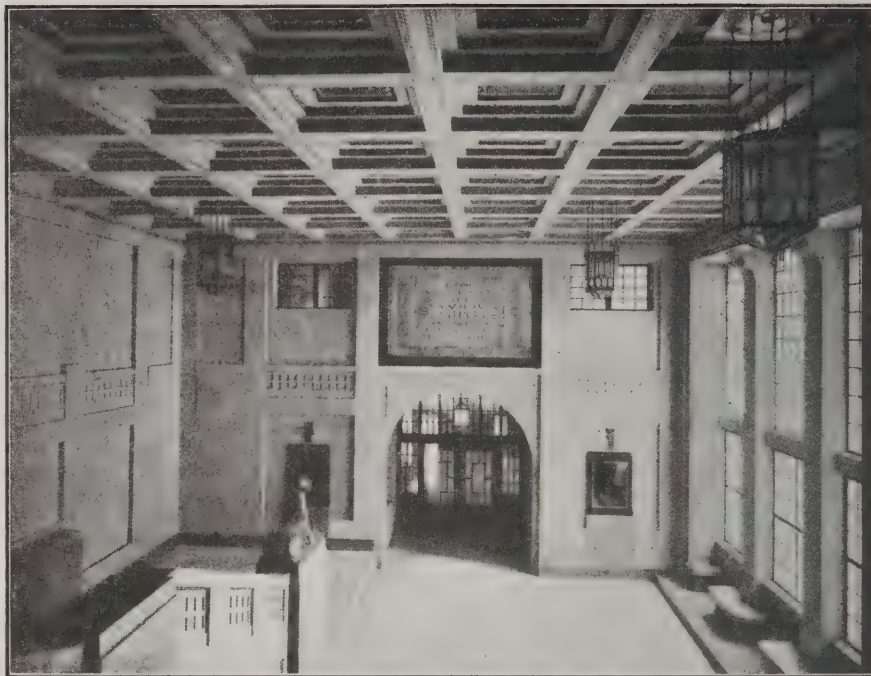
Reinforcing Steel with Concrete.

A bridge in which steel arches are filled with concrete is thought to represent a new type of construction which may admit of many useful applications. The bridge comprises a pure unbraced arch with suspended floor, the arch being formed of two ribs of steel plate box construction of rectangular sections, $15\frac{1}{4}$ ins. inside width, and of varying depth, filled with concrete. The floor is of structural steel and concrete, built of girder cross floor-beams with cantilever extensions for outside footways, which are constructed of rod-reinforced concrete slabs. The arch ribs are square-ended at the spring, and at the crown, though 3 ft. deep, are keyed with a steel plate that gives a bearing depth of only 16 ins. The depth of the arch ring at the spring is about 10 ft., and at the crown 3 ft., abruptly reduced to 16 ins. on the key. This semi-hingeless construction was adopted with the object of obtaining stiffness against variable loads without excessive depth at the quarters and without inducing very high temperature stresses. Hinges would have caused an ungraceful appearance, as the arch would have had to be made much deeper at the quarters than at the ends, and the cost of construction would in that case have been considerably increased. Also the arch type of bridge dispenses with a tension chord and a web shear system, the excess of the arch section at the spring over a compression truss chord being slight in comparison, and the greater cost of the masonry being also considerably less than the saving in steel. The concrete filling of the arch ribs fulfil a threefold purpose. (1) It takes the place of interior steel diaphragms, an extensive system of which would be required to make the wide web plates available throughout as sections to carry compressive stress and to prevent buckling and distortion; and the plates would have been as expensive as the concrete. (2) It protects the interior surface of the box against corrosion more permanently and conveniently than would painting. (3) It gives the arch very considerable strength for carrying comprehensive stress. The bridge above described has been built over the main line of the Pennsylvania Railroad, Philadelphia.

THE ARTISTIC TREATMENT OF
REINFORCED CONCRETE.*

This book, which is supplementary to a series of volumes on the general subject of reinforced concrete construction, represents a brave and a not altogether unsuccessful attempt to prove, from a collection of examples, that reinforced concrete can be treated artistically, or, as we should say, architecturally. In the 148 illustrations there is a sufficient variety of subjects, almost every class of building being represented, warehouses, factories, and shops predominating, but other classes of buildings, public and private—colleges, churches, theatres, railway stations, bridges, to say nothing of water towers, tall chimneys, lamp standards, and what not—appearing in such diversity of form and scope as to suggest a near approach to exhaustion of the subject.

It is in promise, however, rather than in performance, that the collection is gratifying. The examples seem to suggest that architects are slowly feeling their way towards fitting treatment of a material that, after all, is still something so new and strange that as yet its possibilities and its limitations are at best but indifferently comprehended. Even the most casual glance through the examples



ENTRANCE HALL, MUNICH SCHOOL OF ANATOMY.



HALL IN THE KING GEORGE GYMNASIUM, DRESDEN.

confirms the generally accepted view that, with this material as with all others, frankness is best, and that any attempt to treat reinforced concrete as if it were something else is foredoomed to failure.

The process of conversion to sound views will probably be slow, but there need be no despair of its ultimately becoming as complete as human perversity will permit. The German examples naturally outnumber those from other countries, but England might with propriety have been better represented in every sense, the English specimens shown being few and comparatively uninteresting. It is no doubt true that the progress of the system in this country has been greatly hindered by the inelasticity of our building laws and by-laws; but, nevertheless, we are not quite so negligible as the book seems tacitly to suggest.

Of the two illustrations here reproduced, that of the chief entrance-hall of the Munich anatomy school, of which the architects were Herren Heilmann and Littmann, is chiefly remarkable for the treatment of the ceiling, in which, following the principle expressed in open-timber roof construction, the members are frankly revealed, with bold and striking effect. It is explained, however, that the baldness suggested by the reproduction in black and white is considerably mitigated by the decorative colouring that has been applied with dark-blue for the principal tone. In the view of the hall of the King George Gymnasium at Dresden, it will be seen that plaster panels have been formed in the ceiling with excellent decorative effect, while the columns are relieved from absolute crudity by suggestions of plinth and capital, the ornamentation of the latter heightening the impression of oriental influence which, in this as in many other examples, seems to have lent itself very kindly, and, indeed, almost spontaneously to the material.

*Handbuch für Eisenbetonbau. Herausgegeben von Dr. Ingenieur F. von Emperger, K.K. Oberbaurat, Regierungsrat K.K. Patentamt in Wien. Ergänzungsband I.: Die Künstlerische Gestaltung der Eisenbetonbauten. Bearbeitet von E. von Mécenseffy. Mit 148 Textabbildungen. Berlin: Wilhelm Ernst und Sohn. 210 pages, 11 ins. by 7½ ins. [Handbook for Concrete and Steel Construction. Edited by Dr. Engineer F. Von Emperger. Supplementary Volume I.: The Artistic Treatment of Concrete and Steel Structures. By E. von Mécenseffy. With 148 illustrations.]

THE MATERIALS OF REINFORCED CONCRETE CONSTRUCTION.

The quality of the materials must be ascertained with the greatest possible care, and their strength should be known as the result of actual tests. They should be of the best quality; but at least the quality should be kept uniform, and the quality should be taken into account in designing the structure. In particular, the concrete must be kept of uniform strength and consistency; and this uniformity is best secured by the use of a mixing machine. The water used should be above suspicion, and Messrs. Marsh and Dunn, in their fine book on "Reinforced Concrete," mention a case in which a large quantity of concrete was absolutely spoilt in consequence of some chemical refuse being turned into a clear mountain stream some distance above the place where water was being extracted for a reinforced concrete structure. Any chance of chemical pollution should be carefully excluded. In one of the few cases in which rusting is recorded (in the draft report of the Science Standing Committee of the Concrete Institute) to have taken place in reinforced concrete structures, it is noted that, in a culvert, the steel was eaten with rust, and the concrete also was affected, in consequence of the ground round it being made up with refuse from chemical works. Further, with a piece of hoop-iron that had been bedded in brickwork, the fact that the iron, while it retained an appearance of newness, was found to be entirely corroded, was attributed to the effect of sulphates and chlorides in the bricks. The fact that coke-breeze also caused damage in several instances may perhaps be partly attributed to chemical action, owing, probably, to the breeze not having been thoroughly burnt. It is probably the neglect of this condition which has caused an antagonism to coke-breeze which is otherwise inexplicable to its many advocates.

Iron and Steel Work.

As knowledge accumulates, the tendency to use iron and steel of special manufacture will probably increase; but where the ordinary commercial sections are adopted, it is wise to procure them from a firm of repute, and to obtain a guarantee of elasticity and ductility. The ultimate tensile strength of the metal should be not less than 60,000 lbs. per sq. in.; elastic limit, not less than 50 nor more than 65 per cent. of the ultimate strength; elongation, not less than 20 per cent. in a length of 8 ins.; and, in the cold bending test, a bar of the steel shall bend 180 degrees flat on itself without fracture of the outside fibres.

Timber for the Forms.

Experience in the examination and selection of timber for the forms is one of the small but important points in which the expert has the ordinary builder at a considerable disadvantage; the former being able to select with much greater certainty the wood that will remain staunch while the concrete is setting. The slightest failure in this respect may possibly entail serious consequences. The less cement concrete is disturbed after it is once deposited in place, the better. Initial set soon commences, and its disturbance by ramming or beating at one point may permanently damage the setting.

Cement Manufacture.

During recent years, enormous advances have been made towards perfection in the manufacture of cement; and the makers have been quick to ascertain and meet with

admirable exactitude the requirements of reinforced concrete construction, special brands for that class of work having been produced. Nevertheless, the specialist in constant practice commonly has his own laboratory, in which the most careful tests are applied to every consignment, sometimes to every sack.

Cement Testing.

The tests are for coolness, fineness, specific gravity, constancy of volume, time of setting, chemical composition, and cohesive and adhesive strength. Of these qualities fineness is of special importance, as the cementitious value of the product depends on it. The specific gravity for fresh cements must not be less than 3.15, and not more than 3.25. After twenty-four hours' aeration in a 1-in. layer (or in a 1-in. layer for chamber-kiln cements), the least specific gravity should be 3.08. The test may be made by means of Schuman's or Keat's specific gravity bottle, or Stanger and Blount's flask.

Tests for constancy of volume have been much discussed. The diversity of opinion on the subject was made evident at a meeting of the Concrete Institute about a year ago, when Mr. D. B. Butler, A.M.Inst.C.E., F.C.S., read his paper on "The Boiling Test of Portland Cement." The author thought that the freedom from expansion of Portland cement was its most essential property, and should always be the first thing to be determined in estimating the constructive value of a sample; for it is obvious that, notwithstanding other highly desirable qualities which a cement may possess, such as great strength or large sand-carrying capacity, if it is unsound, and contains certain elements which subsequently cause expansion, with, in extreme cases, disintegration and crumbling, it is not only of no use as a constructive material, but is at once converted into a destructive material. Tests mentioned in Mr. Butler's paper, which appeared in the "Journal" of March 30, 1910, included that of the late Henry Faija, who subjected cement pats to 7 hours in moist air of 110 deg. F., followed by 17 hours in warm water of 120 deg. F., which enabled an opinion to be formed in 24 hours instead of having to wait 28 days as formerly. Ten years later M. Deval proposed a test in which, after 24 hours in air or under a damp cloth at ordinary testing-room temperature, and two days in water at 176 deg. F., the strength developed was supposed to be comparable with that of one day air and six days in ordinary cold water; while after a further four days in hot water (that is, one day in air, and six days in hot water) the strength developed was supposed to be comparable with one day air and 27 days in cold water. Mr. Butler described also the Bauschinger micrometer calliper apparatus, which he regarded as providing the most accurate quantitative method of measuring expansion or contraction; and the Le Chatelier test, which was adopted in 1904 as the standard method of determining the soundness of cement. The Committee (revised British Standard Specification, 1907) gives a description of this test: "The cement shall be tested by the Le Chatelier method, and shall in no case show a greater expansion than 10 millimètres after 24 hours' aeration, and 5 millimètres after 7 days' aeration. The apparatus for conducting the Le Chatelier test consists of a small split cylinder of spring brass or other suitable metal of 0.5 millimètre (0.0197 inch) in thickness, forming a mould 30 millimètres (1 3/16 ins.) internal diameter and 30 millimètres high. On either side of the split are attached two indicators with pointed ends, the distance from these ends to the centre of the cyl-

inder being 165 millimètres (6 1/2 ins.). In conducting the test, the mould is to be placed upon a small piece of glass and filled with cement gauged in the usual way, care being taken to keep the edges of the mould gently together while this operation is being performed. The mould is then to be covered with another glass plate, a small weight is to be placed on this, and the mould is then to be immediately placed in water at a temperature of 58 to 64 degrees Fahrenheit, and left there for 24 hours. The distance separating the indicator points is then to be measured, and the mould placed in cold water, which is to be brought to boiling point in 15 to 30 minutes, and kept boiling for six hours. After cooling, the distance between the points is again to be measured; the difference between the two measurements represents the expansion of the cement, which must not exceed the limits laid down in this specification." Mr. Butler, however, quoted a series of experiments showing the varying results obtained by different operators, and even by the same operator working under exactly the same conditions, and he contended, therefore, "that the results given by the Le Chatelier test should not be too rigidly interpreted." On the other hand, in the ensuing discussion, Mr. H. K. G. Bamber said he thought the Le Chatelier test had been of more value to this country than any test that had been brought before them, and several other speakers said that they had found the Le Chatelier test most satisfactory as employed by experts, although it might give variable results in the hands of amateurs.

Testing for Set.

The time of setting of cement seems to have but little relation to its quality, and formerly it was a matter over which the makers seemed to have but little control. Recently, however, they have employed means of retarding the setting within reasonable limits, and in this way are meeting a rather special requirement of reinforced concrete work, for which a slow-setting cement is particularly desirable. The test for setting is conducted as follows: "The cement shall be mixed on a non-absorbent surface for not less than 20 minutes nor more than five minutes with 22 1/2 per cent. of water into a paste, and be tested with the Vicat or other suitable apparatus. The initial set shall not take place under 30 minutes, nor the final set under five or over ten hours, the paste being covered with a damp cloth between the testing with the needle. The temperature during this test shall not vary beyond the extremes of 58 deg. and 64 deg. F. The manufacturer may be allowed to add to the manufactured cement any quantities of calcium sulphate (calculated as anhydrous calcium sulphate) or water up to 2 per cent. of the weight of the cement, in order to satisfy this test."

Setting, of course, is not to be confused with hardening. The former usually takes place within a few hours, or perhaps minutes, while the hardening is continuous for months or years; and it is admitted that the chemical changes which take place in setting and hardening are not precisely and thoroughly understood. The addition of 1 to 2 per cent. of gypsum will alter the time of setting from a few minutes to several hours.

Concerning Aggregates.

In considering the very important question of aggregates, it must always be carefully borne in mind that upon the character of the aggregate the quality of the concrete must largely depend; neither quality nor quantity of cement atoning for unsuitability of aggregate. Large stone or gravel should

not be used for reinforced concrete work. For floors, everything should pass through a $\frac{3}{4}$ -in. mesh. Loamy, greasy, or dirty aggregate is excluded. Broken slag, unless ascertained to be free from sulphur, should be rejected; coke-breeze should be thoroughly burnt; and limestone must never be employed. With regard to sand, practical men are beginning to show a tendency to ignore the more minute precautions that theorists have prescribed for them in such matters as shape and washing of the grains; but it is at all events better to err on the side of caution and precision with respect to sand and all other materials; the success of reinforced concrete construction depending very largely on the systematic cultivation of habits of accuracy, relaxation in any direction, or in any particular should be discountenanced on principle.

THE MANUFACTURE OF PORTLAND CEMENT.*

By A. C. DAVIS, F.C.S., Assoc. Inst. C.E.

Portland cement was originally invented in England some three-quarters of a century ago, and the British makers adhered solidly to old-fashioned methods for some decades. These at last had their day. But whilst we were dormant, our foreign rivals not only copied the manufacture of this invaluable product from us, but actually improved upon it to such an extent that their industrial conditions, as far as cement-making is concerned, have been a revelation to us. For some years, however, the British cement-maker has been actively engaged in building modern works and putting down up-to-date plant in his obsolete factories, with the result that for quality of product, combined with low cost of production, the British manufacturer has nothing to fear from oversea competitors, and British Portland cement to-day has no rival in quality the world over.

Early Examples.

Vitruvius Pollio, a celebrated architect of the time of Augustus, Emperor of Rome, describes concrete as one of the most valuable building materials which for centuries before his time had been used for foundation walls and all structures where great strength was required.

The great dome of the Pantheon in Rome, 142 feet in diameter, was built entirely of concrete, and remains to this day an example of durability, having resisted the destructive influences of Nature for well-nigh two thousand years.

The cementing material of past ages, however, was no doubt more akin to what we now know as hydraulic lime than the comparatively modern product, Portland cement.

As to the history of cements, the first information we can find in regard to the discovery of this product or its allied materials is in the records left by that eminent English engineer, John Smeaton, who, during the construction of the third Eddystone Lighthouse in 1757, discovered that a calcined mixture of lime and clay possesses the property of hydraulicity. It is reasonable to suppose that the material which Smeaton then prepared was what we should term an hydraulic lime.

Little notice was, however, paid to Smeaton's discovery, and some fifty years later the French chemist Vicat followed Smeaton's observation to its natural and logical conclusion, and made another step

forward in burning together finely pulverised chalk and clay, after having mixed them into paste. His process, however, received little attention.

In the year 1824 we have the practical commencement of the manufacture of what we know to-day as "Portland" cement, when the English mason, Joseph Aspdin, of Leeds, found that by mixing in certain well-defined proportions finely pulverised chalk with the clayey mud of the River Medway, and burning the same at a high temperature, he was able to produce an hydraulic binding far exceeding in quality any product known up to that time. This material possesses the delicate grey colour of Portland stone, and thus received the name of "Portland" cement, which formed the subject of Aspdin's oft-quoted patent of October 21st, 1824.

It is safe to assume that the Thames Tunnel, constructed in 1828, was the first engineering work of importance in which Portland cement was used. The price at that time, by the way, was 21s. per cask at the works, while to-day a far superior quality product can be purchased at some 4s. per cask, so much have the conditions of the industry altered in the past three-quarters of a century.

What is Portland Cement?

Now, what is Portland cement? The term "Portland" is limited to an hydraulic cement containing a large percentage of lime, and at once distinguishes the valuable constructive material bearing that title from other cementitious substances.

From a study of authoritative British, German, French, and American definitions, we arrive at the point that Portland cement is a chemical product obtained by the preliminary mechanical combination of carbonate of lime with silica and alumina, which, after passing through the succeeding stages of manufacture, becomes a mixture of silicates and aluminates of lime.

The normal size of a factory is one having an output of some 500 to 1,000 tons of Portland cement per week, and in this country alone we have some eighty cement companies with a total output of some 3,000,000 tons of cement per annum, which is equal to 15,000,000 tons of concrete or 8,350,000 cubic yards—the contents of a wall 6ft. wide, 20ft. high, and 350 miles long, which could only be constructed at a cost of five million pounds sterling.

Blending the Materials.

The preliminary mechanical blending of the raw materials for the manufacture of Portland cement is a stage requiring the utmost technical skill, for the thoroughness of the process primarily determines the quality of the resulting cement, and if the manufacturer is to turn out a product of reliable quality, the scientific supervision of this branch of the manufacture is of paramount importance.

The primary conditions of any method of Portland cement manufacture are that the raw materials shall be (1) correctly proportioned; (2) very finely comminuted; and (3) thoroughly mixed. The proportions of chalk and clay must be kept to a standard as closely as possible, and this at the present time, in the most successful cement works, is carried out under the supervision of the works chemists.

Burning the Materials.

After describing in detail the wet and dry processes of mixing the raw materials, the author observed that the kilns for burning the raw materials are always constructed for either an "intermittent" or a

"continuous" process. The intermittent kilns now generally adopted are those employed in the wet process, and are of such a design that the burning necessitates a distinct loading and drawing operation, giving intermittent working and demanding the shutting down of the kiln during the drawing operation. In the continuous kilns, the burning of the raw material proceeds without a break, and the drawing of the clinker takes place at the same time without interruption, thus making a continuous process.

The manufacture of cement by the rotary kiln may be said to have revolutionised the industry, and this method of burning the raw materials is perhaps the most scientific and practical invention that has been introduced into the manufacture since Portland cement was first known. More than 90 per cent. of the cement manufactured in the States is produced by the rotary kiln, and in England there are numerous works in which the kiln is solely adopted. The rotary kiln consists of a slightly inclined steel or wrought-iron cylinder, usually from 100 to 150ft. in length, and 6 to 8 ft. in diameter, and it is inclined to the horizontal at about 1 in 30. The kiln is lined with radial fire-bricks, some 9in. in thickness, and the long cylinder is mounted on tires running on rollers and slowly rotated by gearing.

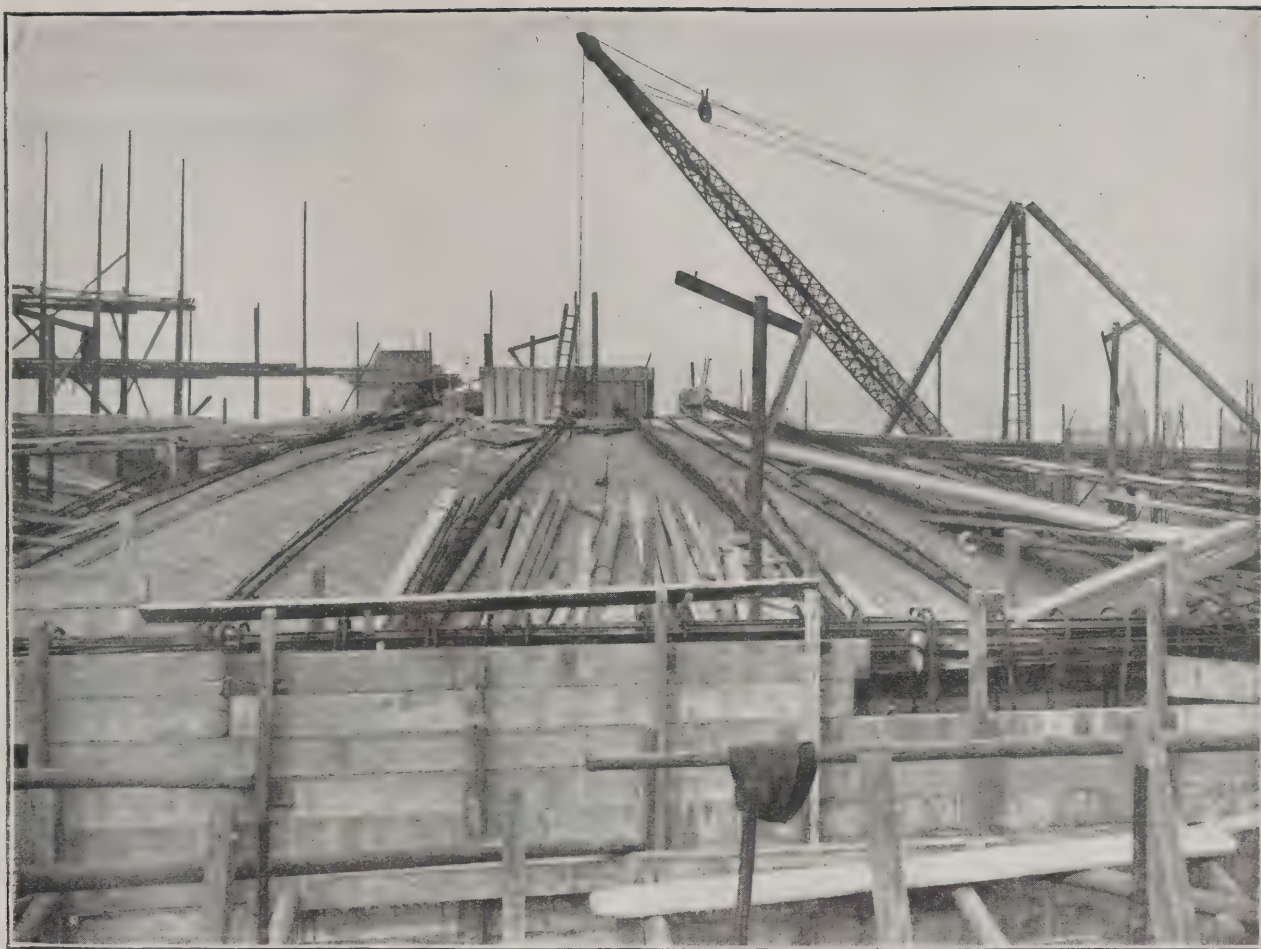
The cement-making materials are continuously fed into the kiln through a pipe at the upper end, in the form of either liquid mud or dry powder, according to the process adopted in preparing and mixing the raw materials. Finely ground coal is almost always used as fuel, and this is introduced into the lower or outlet end of the kiln by a jet of air issuing from a blast fan.

When the kiln is started the fine coal is ignited, and after a time a white heat is obtained in the lower end of the cylinder. The raw material is then fed into the kiln, and as it gradually descends into the zone of heat generated by the perfect combustion of the finely ground coal fed into the cylinder from the opposite end, it parts with any carbonic gas, forms little rounded balls which reach nearly white heat in the lower third of the kiln, and finally issues at the lower end as well burned clinker in



WESLEYAN METHODIST HALL,
WESTMINSTER: BULL'S EYE DORMER.

*Extracts from a paper read at the Royal Society of Arts, John Street, Adelphi, on March 22nd.



WESLEYAN METHODIST HALL, WESTMINSTER: VIEW OF INNER DOME IN COURSE OF CONSTRUCTION.

grains about the size of a large pea. The greatest heat is naturally near the fuel-jet or outlet end of the kiln.

The hot clinker from the kiln is cooled either by being elevated to cooling towers or by rotary cooling drums. The cooling drums now generally in use in this country are placed at the lower end of the kiln, and receive the hot clinker as it drops finally from the kiln and passes into the coolers. These generally consist of tubes some 40 ft. long and 4 ft. in diameter, containing cascading channels for lifting and dropping the hot clinker as the coolers rotate, thus presenting it to the cold air drawn through the clinker by the fan discharging coal to the kilns. The coolers rotate at a somewhat higher speed than the furnace tube, and by the air for the latter being drawn through the red-hot clinker a fair proportion of the otherwise lost heat is retained and utilised. When the clinker issues from the coolers it is quite cold enough to handle, and to pass to the further process of grinding into powder.

All rotary kiln-plants with ground-coal firing must include an apparatus for the drying of the coal to be used in the burning, and also a grinding plant to enable the coal to be finely pulverised before entering the kilns.

Grinding the Clinker.

The final stage in the process, the grinding into an extremely fine powder of the clinker which comes from the kilns, is a process that has exercised quite a large proportion of ingenuity during the past few years. In clinker-grinding not only is it necessary that a certain degree of fineness be attained to make a satisfactory quality of cement, but that also as large a proportion of "flour" as possible shall be contained in the finished product. By

"flour" I mean that the cementitious property of the material is believed to reside principally in the extremely fine particles of cement, as apart from the "residue," which consists of practically inert material.

The first stage in the reduction of the clinker is generally carried out by an ordinary stone-breaker or crusher, or rolls, which reduce any large lumps to the size of about three-quarter-inch cubes down to coarse dust, and after this operation the clinker is conveyed to the fine-grinding machinery.

In modern works the preliminary grinding of cement clinker is carried out by the ball-mill, and from this mill the coarsely ground material is conducted to a tube-mill which finishes the fine grinding previous to storing the cement. The ball-mill consists of a cylindrical grinding drum, mounted on a steel shaft running through it, and provided with a tightly closed sheet-iron casing. The grinding-drum is composed of overlapping steel grinding-plates, in one half of which holes are bored for the ground material to find its way through to the fine sieves externally surrounding the drum, and through which the somewhat coarsely ground cement passes and is conveyed to the tube-mills for finer grinding. The crushing action of the ball-mill is caused by the revolving of the drum, which contains a number of steel balls of various sizes between which the clinker is crushed and pulverised.

Fine Grinding.

For the finishing process—the fine-grinding proper—the tube-mill is employed, which grinds by means of the round flint stones contained within it. The tube-mill consists of a wrought-iron revolving cylinder with hollowed pivots at both the feed and delivery bearings, and is about

one-half full of rounded flint stones. The coarsely ground cement is fed from the ball-mill into one end of the tube-mill, and the rotary action of this mill, similarly to that of the ball-mill, finely pulverises the cement as it passes through the falling flint stones to the delivery end.

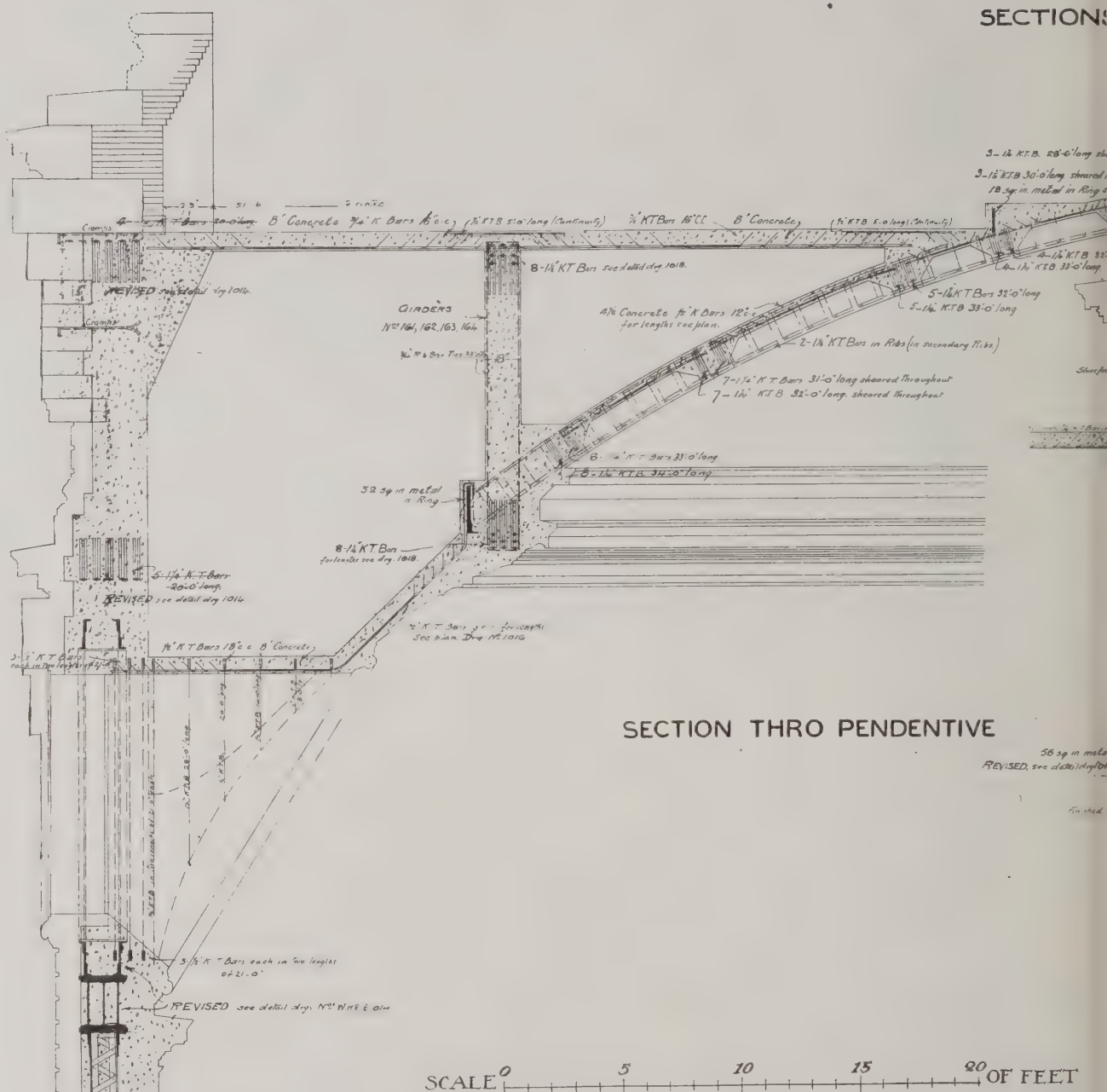
The finished cement is ground sufficiently fine to pass through a 76 by 76 mesh sieve with about 1 per cent. residue, and although finer grinding is rarely demanded it can be readily accomplished by the manufacturer, if necessary; but this means a reduced output from the plant.

THE INNER DOME OF THE WESLEYAN HALL, WESTMINSTER.

The most important dome yet constructed of reinforced concrete in this country is that of the new Wesleyan Hall, Westminster, of which Messrs. Lanchester and Rickards are the architects, the general contractors being Messrs. Dove Bros.

The weight of the dome is carried into the main girders on the four long sides by means of diagonal beams of about 55 ft. span, with four secondary beams parallel to the main beams. The dome itself does not come on the main beams at all. There are sixteen ribs and seven rings, only three of which are thrust rings. The main-thrust ring at the foot of the dome contains 32 sq. ins. of metal. The openings shown are for air-inlets. The Kahn system (Trussed Concrete Steel Co., Ltd.) of reinforcement is employed, and the concrete mixture consists of one part cement, two parts sand, four parts aggregate. The accompanying illustrations show many interesting details of the construction.

SECTIONS



When gauged with 21 per cent. of water and 2 per cent. of machine oil it was 680 pounds, and with linseed oil in a similar proportion the tensile strength was 555 pounds. As might be expected, the saponifiable linseed oil reduced the strength to a

THE EFFECT OF FROST UPON
CONCRETE.

The effect of frost upon concrete work has on many occasions been the cause of dissatisfaction between manufacturer and user, and it is generally known that if a cement mortar is frozen immediately after mixing, the set cannot commence until a thaw has taken place. Cement concrete or mortar is generally gauged with a larger quantity of water than is required for the chemical combination, and if this excess water is frozen after the setting has somewhat progressed, the consequent expansion may be sufficient to disintegrate the cement mixture.

To enable the use of cement or concrete in buildings to be continued during very cold weather, many experiments have been made by experts to determine the effects of using salt, glycerine, and alcohol, and other anti-freezing agents in the water used in mixing the mortar, and in the use of salt—most commonly employed—it has been found that the freezing point of water is lowered about one and a half degrees Fahrenheit for each cent. of common salt added; thus a 20 per cent. solution would freeze at about 2 Fahr.

The results of many tests have, however, shown that they are of but limited practical use. The most important deduction which has been formed from such experiments is that any addition of salt will decrease the ultimate tensile and compression strength of the mortar in which it is used, but for low percentages of salt (3 per cent. to 5 per cent.) this defect may be slight enough to be safely disregarded. Solutions containing as much as 10 per cent. to 15 per cent. are unsafe, and will have deleterious results. It has been found, however, that Portland cement mortar made with fresh water may be subjected to very low temperature 24 to 48 hours after moulding without seriously decreasing the tensile strength. The use of warm water 100 deg. to 156 deg. Fahr. in freezing weather appears to give somewhat better results than cold water, but failing more definite results from experiments to be made it is safer to refrain from the use of cement mixing in freezing temperature.

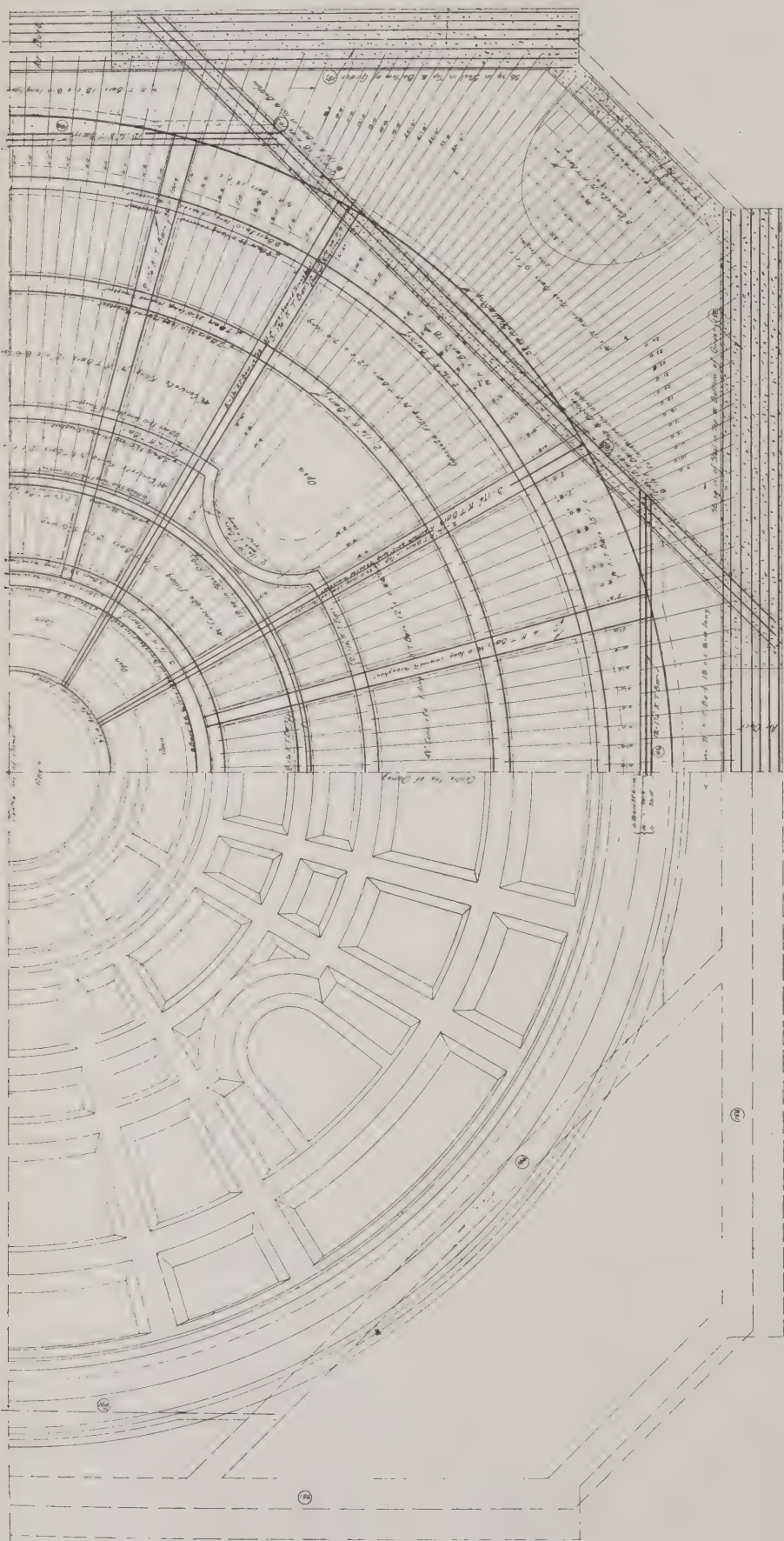
THE CONCRETE INSTITUTE.

The next ordinary general meeting of the Concrete Institute will be held at Denison House, 296, Vauxhall Bridge Road, Westminster (close to Victoria Station) on Thursday, April 6th, 1911, at 8 p.m., Sir Henry Tanner, I.S.O., F.R.I.B.A., presiding, when Mr. C. Percy Taylor will read a paper entitled "The Reinforced Concrete Pier at Swanscombe," to be illustrated by lantern slides. The offices of the Concrete Institute will be removed from 8, Waterloo Place, S.W., to Denison House, 296, Vauxhall Bridge Road, Westminster, S.W., on March 25th.

The rules of the Concrete Institute were recently altered so as to enable a Students' Section to be established in fulfilment of one of the chief objects of the Institute, namely, to advance the knowledge of concrete and reinforced concrete and their constituents, and to direct attention to the uses to which these materials can be best applied. In further extension of this policy, a course of educational lectures on the subject of "Reinforced Concrete" is being arranged for students and the public; these will be given on six consecutive Wednesdays, commencing April 26th, at 5.45 p.m., and occupying approximately one hour. Admission will be free, by ticket.

WESLEYAN METHODIST HALL, WESTMINSTER: PLAN OF INNER DOME.

SCALE 0 5 15 30 OF FEET.





PORTION OF DISTRICT RAILWAY BEING COVERED IN WITH REINFORCED CONCRETE FLOOR (SOMERVILLE SYSTEM)

A FLOORING TEST.

An interesting test of one of Messrs. D. G. Somerville and Co.'s systems of fire and sound-resisting flooring was recently carried out by them at their New Cross works, under the supervision of the Metropolitan Engineer, Mr. Drury. Messrs. Somerville's floor consists of hollow reinforced concrete tile, of arched section, about 3ft. 4in. span, the reinforcement comprising a network of steel rods continuous around the tile. The tiles are manufactured in iron moulds, and are then matured for two months before being used.

The test was carried out with a view to testing the load-carrying capacity, and also as to determine whether there was any thrust transmitted by the arched tiles to the rolled steel joists when heavily loaded. A section of floor, 7ft. span by 3ft. 4in. wide, was constructed with two 6in. by 3in. rolled steel joists, six tiles being placed between, and then concreted over with clinker concrete, gauged 6 and 1. The age of the tiles was three months, and the finished floor five weeks, the two 6in. by 3in. rolled steel joists being tied together by three tie-bolts of $\frac{1}{2}$ in. diameter to take up any thrust. Messrs. Somerville guarantee this floor to support a superimposed load of 3 cwts., but under a concentrated load of 7 cwts. (equivalent to a distributed load of 14 cwts.), no deflection or sign of failure could be observed, the loading at this point having to be discontinued owing to the impossibility of carrying it up any higher. When a load of 10 cwt., or half a ton per square foot, was reached, the tie-bolts were un-

screwed, but not the slightest sign of thrust could be observed, even when the maximum load of 14 cwt. per square foot was reached; this clearly proving that the bottom chord was a perfectly efficient tie. The accompanying illustration shows a long section on the District Railway being covered in between St. James's Park and Victoria Station on Messrs. Somerville's system.

SOCIETIES' MEETINGS.

EDINBURGH ARCHITECTURAL ASSOCIATION.

Scottish Leadwork.

At a meeting of the Edinburgh Architectural Association, held on March 15th, Mr. Lawrence Weaver, F.S.A., delivered a lecture on "British Leadwork: Its Art and History." Unfortunately, he said, Scotland was not a very fruitful field in which to study the art of the leadworker, if the noble spires of Aberdeen were excepted. This was due to the fact that Scottish lead mines were but scantily worked in the middle ages. In England there were 30 ancient fonts of lead, many of them of the twelfth century. Most of the early Gothic leaded spires of England had disappeared, owing to fires destroying their timber framework, and this cause was responsible for the loss, some 40 years ago, of the magnificent pinnacled example of St. Nicholas, Aberdeen. St. John's, Perth, retained its spire of collar-type, and at King's College, Aberdeen, was an hexagonal flèche of particular beauty, for which no parallel existed in England. Lead was pre-eminently the best material

for garden ornaments. To-day, Scottish architects had been honourably to the fore in reinstating lead in its rightful position as a material peculiarly capable of artistic treatment.

GLASGOW INSTITUTE OF ARCHITECTS.

Restoration of Glasgow Cathedral Roof.

"Glasgow Cathedral Roof Restoration: Its Necessity, Principles, and Methods," was the title of a paper which Mr. W. T. Oldrieve, of H.M. Board of Works, Edinburgh, read last week before the Glasgow Institute of Architects. Mr. Oldrieve said that many and various had been the definitions of "restorations" as applied to architectural works, and monstrous had been sometimes the results. In many cases original work of great merit was cut away or mutilated to make room for modern work devoid of character. Such a restoration was perpetrated probably about 1735, when the original design of the roof of Glasgow Cathedral was deliberately obliterated by the simple process of hacking away the oak moulded ribs, carved work, and panel boarding in order to substitute the plaster ceiling. The term "restoration" he applied to the present endeavour to ascertain what was the original design; and, so far as they could, to restore it. Mr. Oldrieve outlined the principles upon which the scheme of restoration is based, and described the methods by which these principles are to be applied. He said the principle upon which the new roof had been designed had been to ascertain from a very careful examination of the remains of the old roof every detail which would throw light upon the original work, and to endeavour to follow the guidance thus obtained. Upon the naked timbers being exposed by the removal of the plaster ceiling, diagrams, sketches, and photographs were prepared, and fragments of details which would help to elucidate the problem were carefully noted, all peg-holes being marked and plotted in their correct positions. That originally there was internal boarding was clearly proved because fragments of the actual oak boarding and grooves were found upon some of the principal rafters. One fragment only was found to indicate the character of the moulded principal rafters, and it was carefully measured and drawn full size. From this fragment it was possible to construct the contour of the original mouldings. The greatest surprise of all was to find that the original rafters had been shaped so as to form a trefoil or cusped roof. When they at first examined the roof from the interior space near the ridge it was only possible by the light of a lantern to look down between the outer boarding and the plaster ceiling, and in one or two instances to crawl down into a very limited space so far as anyone could reach. It did not occur to anyone that the uneven shaped timbers were all carefully shaped in order to form the cusped design which was a most unusual, if not unique, form for trussed-rafter type of roof to take in a church of large dimensions. In carrying out the work, firms of high standing as modellers and carvers were invited to submit sketch models and tenders, the result being that the work had been divided between Glasgow and Edinburgh firms. Mr. Oldrieve described the arrangement of the subjects of the roof carvings, and said the leading idea along the ridge from west to east was to be the life of Christ. The choir would have richer carving, not only having bosses at the intersections of the moulded ribs, but angel figures over the main wall shafts with shields bearing the



SECTION OF SOMERVILLE REINFORCED CONCRETE FLOOR.

arms of the bishops or other church dignitaries who had had most to do with the cathedral. Intermediately at the wallhead would be shields bearing the Royal arms and crowns of the kings most intimately connected with the cathedral. It was hoped that before the work was completed, means might be found to illuminate heraldically all the shields, and to gild the initial letters and dates, so as to give interest both historically and artistically. So far as purely constructional design was concerned, the object aimed at had been stability; first by relieving the main walls of outward thrust, and then by providing longitudinal rigidity.

LEICESTER SOCIETY OF ARCHITECTS *The Classic Revival in Leicester.*

At the meeting of the Leicester and Leicestershire Society of Architects, held on March 17th, Mr. Albert Herbert, A.R.I.B.A., dealt with "The Classic Revival in Leicester." Mr. W. M. Cowdell, president, was in the chair. Taking that portion of the town lying between Welford Place and the Midland Station, Mr. Herbert said the period when most of the buildings representative of the revival were erected was between the years 1800 and 1870. Proceeding to deal with typical examples, Mr. Herbert dealt specially with the New Hall, better known now as the Old Free Library; the old news rooms, now demolished, at the corner of Belvoir Street and Granby Street; the Theatre Royal; the Temperance Hall; the old Midland Station buildings; Messrs. Stone's offices in Welford Place; several chapels; and a number of dwelling houses and mills erected between 1825 and 1855. He expressed the opinion that study of this kind was useful in view of the unquestionable advent of town planning.

THE ST. PAUL'S ECCLESIOLOGICAL SOCIETY.

Ely Cathedral.

Those who attended the meeting of this Society, which was recently held in St. Paul's Chapter-house, London, E.C., had a rare treat in seeing the display by lantern of the splendid series of photographs with which Mr. H. W. Fincham accompanied his paper on "Ely Cathedral, the Queen of the Marshes." The paper itself was useful chiefly as giving a summary of the history of the foundation, and did not profess to enter into purely architectural demonstration; indeed, the author made one mistake in bringing forward the idea that the interlaced Norman arches suggested the pointed arch, which is, of course, a mere popular fallacy; but the series of lantern views would have been worth seeing in themselves, quite independently of any lecture. Mr. Fincham has been photographing Ely for years, and showed his audience every possible view of the exterior, and almost every detail of the interior; many details, exterior and interior, having been taken by telephotography so as to bring them close to the eye in a way in which they cannot really be seen in the building itself. We never remember to have seen a great building illustrated in so complete a manner in a single evening. In the course of a short discussion which followed, one of the speakers took the opportunity to recommend strongly the rebuilding of the northern wing of the west front, which fell down long ago, no one knows when or why. This is not a case of what is rather foolishly called "restoring" some feature which has disappeared to what it is imagined to have originally been; in this case there can be no doubt that the two sides of the façade were symmetrical; we

have the south side for a guide; to build up the north side similar to it would be merely completing again a design of which one half has fallen down, leaving the front painfully unsymmetrical. It is quite worth doing, and would be quite justifiable on architectural grounds. We may add that Mr. Fincham's collection of slides would be quite worth showing at one of the meetings of the Institute of Architects.

A NOTABLE INSURANCE BUILDING.

The Architectural Association's fourth spring visit to the new building for the General Accident, Fire, and Life Assurance Corporation, Ltd., took place on March 18th. Mr. J. J. Burnet, L.L.D., A.R.S.A., is the architect, and Messrs. Keridge and Shaw the contractors. Standing in Aldwych, on a site with a curved frontage, the building possesses many striking features. The façade is of Portland stone, the centre portion from the ground to the first floor being set back from the building line. The building above is supported by two beautifully proportioned Ionic columns of grey granite, with black marble caps and bases, the caps being unpolished and oiled. Granite and black marble are employed in the plinth and the entablature. The portion set back has a facing of Crestola statuary marble, with half columns at intervals, on which will be placed white metal figures symbolical of strength, prudence, abundance, and prosperity. In the centre is the entrance (the only means of access to the building), with a black marble architrave. The doors are of oak, "cupronized" copper being deposited directly on to the oak to a thickness of about 3-16ths of an inch. A deep shadow is obtained by setting back the top storey above the main cornice, and carrying over the roof supported on piers. The soffit is divided into panels and painted with heraldic colours. Westmorland green slates are used for the roof. Mr. Albert Hodge is responsible for the excellent figure sculpture.

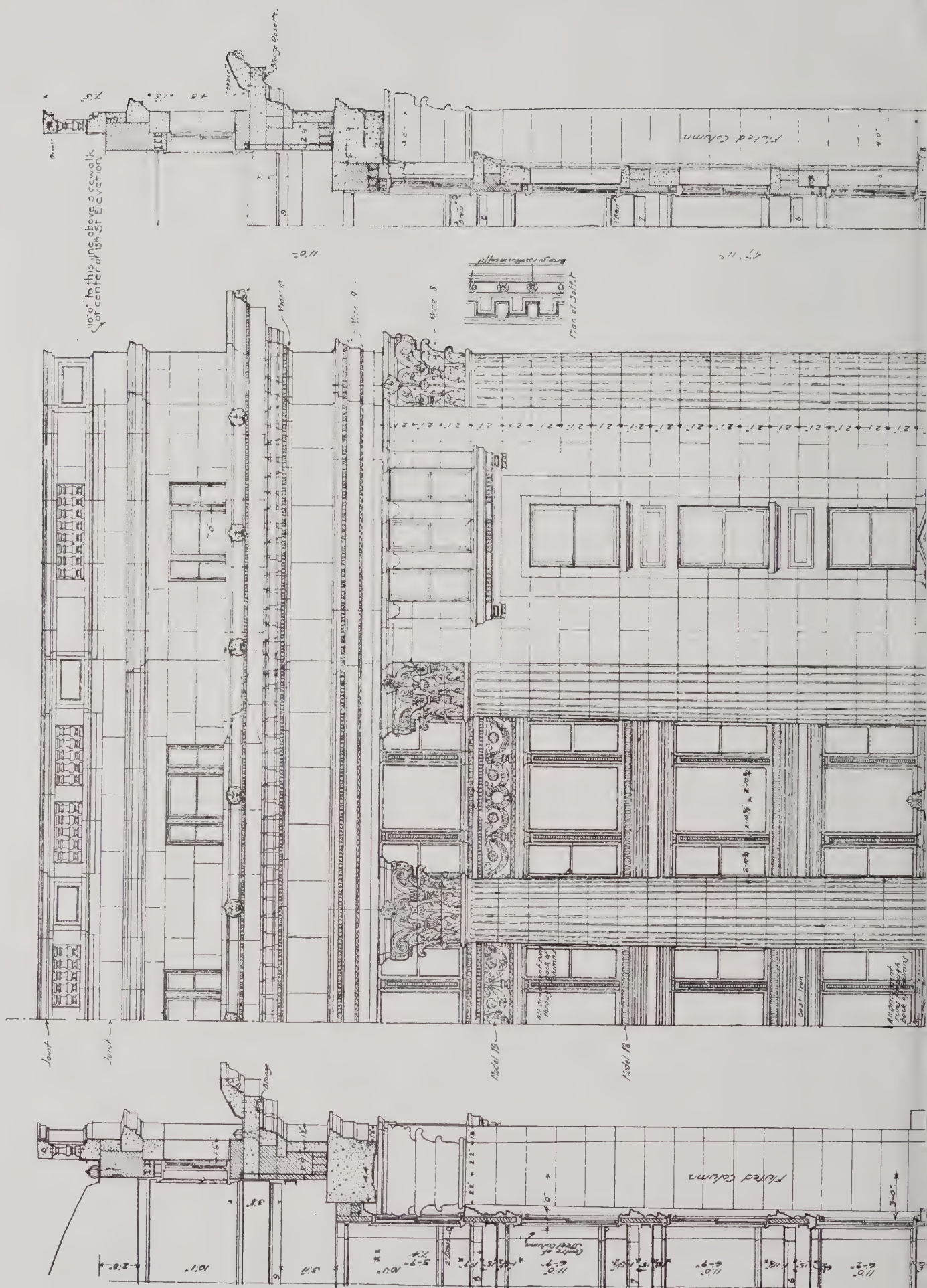
The difficulties of the site are overcome by an exceedingly clever plan. The depth is roughly halved, and a line drawn right through. On this line the vestibule, staircases, and lifts are placed. On the right of the entrance lobby is the main staircase, and on the left the Corporation offices, which are entered through a fire-resisting porch. On the right, on entering the vestibule, is the general office, with cubicles for the heads of departments, and also typists' and waiting rooms. On the left are private rooms for managers. On the opposite side are doors which lead to the Corporation's private stairs, and the elevators serving the staff w.c.'s on the sixth floor. By this stair the mezzanine floor is reached. On two sides of the general offices are galleries with desk accommodation for the staff, fronting Aldwych. On this floor are situated the private rooms and board room, which are reached by an oak panelled corridor. The board room is panelled to a height of 6ft. The room is well proportioned and simply treated. Grey marble is used for the hearths and surrounds of the steel fireplaces. All the woodwork on these floors is oak. The balustrade on the mezzanine floor is especially good, having plain, square, and turned and curved balusters, and two finely carved bays. In the vestibule the carving has been executed by Messrs. Martyn and Co. For the decoration of

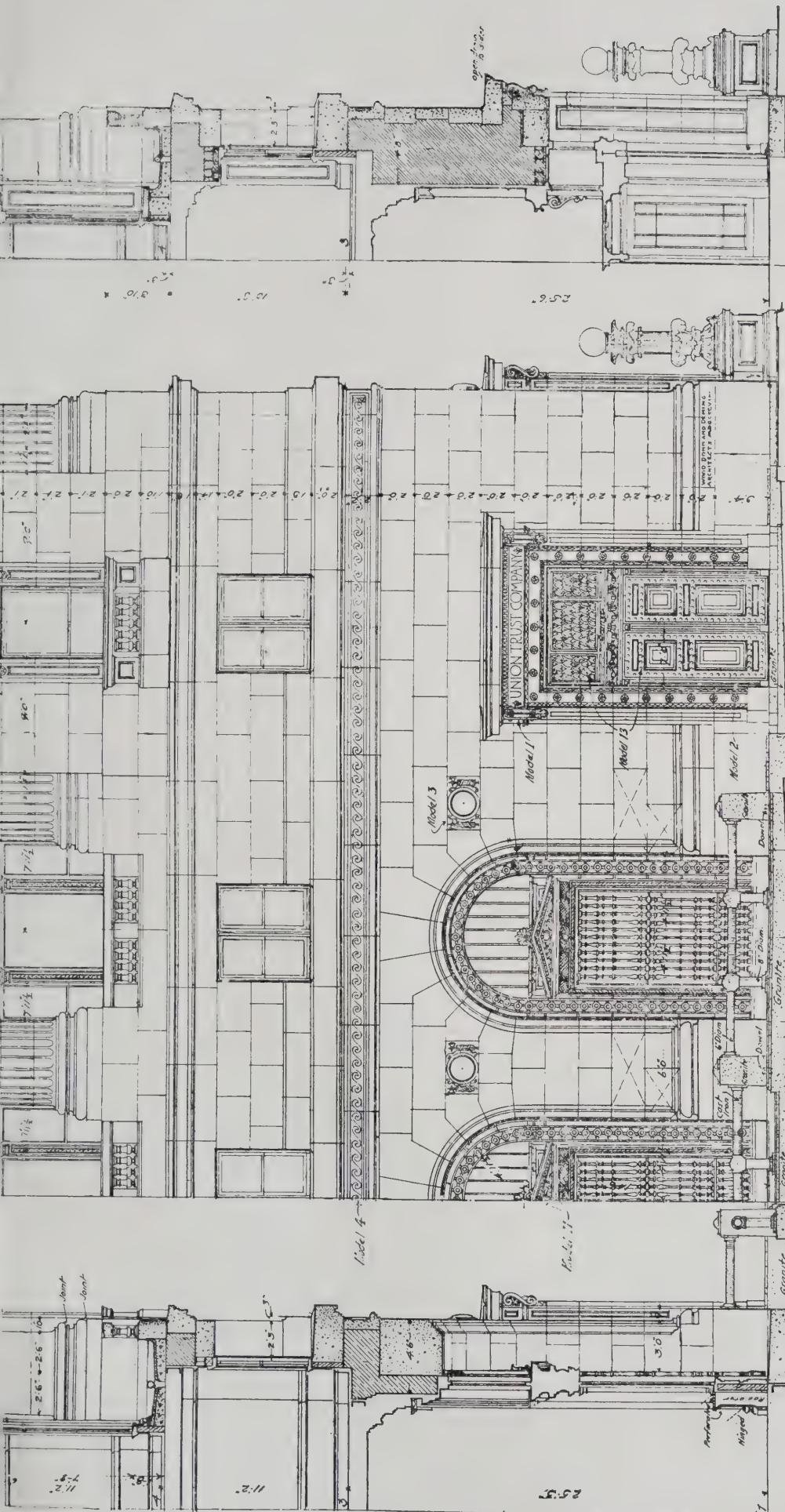
the ground floor wall and floor surfaces marble similar to Crestola statuary has been used, with bands of Greek blue and Mezzano marbles. The Mezzano, being a dove coloured marble, is used against woodwork, so as to avoid violent contrasts. Harmony is obtained in the wall and floor surfaces by continuing up the bands of Greek blue on floors as architraves on walls.

The dome over the vestibule is of antique glass, and is the work of Mr. A. J. Dix. The colour, which is concentrated at the top, shades off to something approaching white at the base. The fine colour schemes add much to the beauty of the building, infinite care and thought having been given to the smallest detail. Part of the ground floor is to be let. The whole of the basement, except a small portion for safe accommodation for tenants, is occupied by the Corporation. The sub-ground floor is occupied by stationery, safes, and telephone exchange. Part of the fifth floor accommodates the medical staff, and the sixth floor provides lavatory accommodation for the Corporation and separate lavatories for tenants. Caretaker's quarters are also on this floor. On the roof are the storage tanks for domestic and heating supplies, and rooms for the elevator motors. The remainder of the building is to be let. Heating and ventilation are on the plenum system, supplemented by radiators.

CORONATION DECORATIONS.

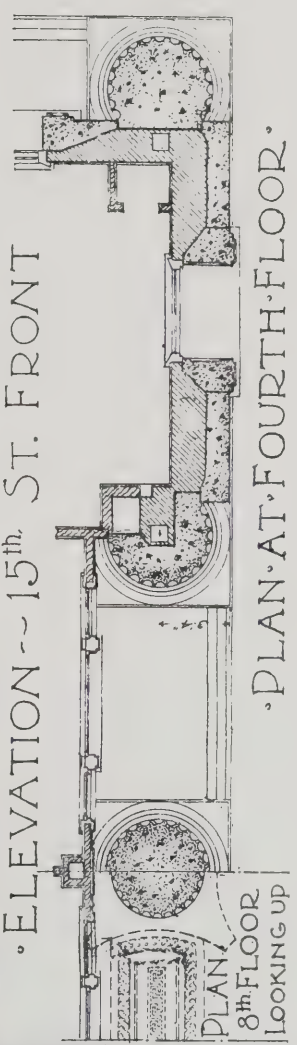
The special spring number of the "Decorator" (365, Birkbeck Bank Chambers, High Holborn, W.C.) contains, among many special features, an illustrated article on "Coronation Decorations," by A. L. Duthie, who suggests several improvements on the Venetian masts, triumphal arches, and strings of bunting which form "the only stock and store" of the average decorator. He thinks that canopies of different forms might be employed, but, admitting that to hang up a large square fabric would be unadvisable, because of the great hold which it would offer to the wind, and the consequent difficulty of finding a sufficient fastening for it, he thinks a square might be made up of alternate strips of material of different colours, fastened to ropes by the ends only, not seamed together at the sides, and even leaving considerable spaces between. "Such an arrangement would not only offer less resistance to the wind, but by the varying lift and play of the different parts would make a most interesting point of moving colour." But would it not frighten the horses? Another suggestion is the use of light trellis-work laths backed by coloured cloth. This would be of special use for covering up old and dingy brickwork or masonry. The worldly-wise observation that "as most folks like to combine a little bit of advertising with their display of loyalty, every effort must be made, not only to avoid concealing signboards, etc., but also to include them in the general scheme, and to make use, wherever possible, of their stock-in-trade," rather grates on the nerves, but in this intensely commercial age it would be futile to protest against a piece of utilitarian advice which will probably commend itself to the majority of those for whose guidance it was written. This special spring number, which contains about a hundred pages, includes many articles of use and interest to the practical decorator.





ELEVATION ~ 15th. ST. FRONT

SECTION.
15th. ST FRONT.



PLAN AT FOURTH FLOOR.

UNION TRUST COMPANY BUILDING, WASHINGTON. WOOD, DONN AND DEMING, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 5th, 1911.

Volume XXXIII.

No. 845.



The eight oaken posts of this old "Butter-Cross" rest on stone blocks, and in the centre is a solid stone pier with seats for the market women. The village stocks, too, are under shelter of the octagonal roof.

THE OLD "BUTTER-CROSS" AND STOCKS AT OAKHAM, RUTLANDSHIRE.



BYSTOCK, EXMOUTH. WIMPERIS AND BEST, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 5th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 845.

NOTE: The List of Contents will be found on page V. of the front advertisements.

Domestic Architecture of To-day.



DOMESTIC architecture—by which we mean the architecture of the average-sized house—has passed through two or three phases in recent times. So long as the influence of the Gothic Revival lasted, the correct thing in house architecture was to be as picturesque as possible; and to be picturesque meant to have a great deal

of high-pitched roof and as many gables as possible, and to cut up the plan into a number of projections and in-and-out lines. It was not a practical manner of building, leading often to inconvenient places and to a good many unnecessary difficulties in roof construction and the carrying-off of rain-water. The reaction against this, which was bound to come, has resulted in a taste in exterior house architecture which has gone to the other extreme, and in which absolute plainness of brickwork and squareness of plan seem to be the ideal. We say advisedly for exterior house architecture, for many of these ultra-plain exteriors conceal a good deal of very charming decoration internally. We see the same contrast in the London brick street houses of a century ago, in Wimpole Street and in Bedford Square, and other of the Bloomsbury squares, which are full of graceful and effective chimney-pieces and ceiling ornaments. It seems to have been the rule in those days that all the grace was kept for the interior of the house, which showed little but a brick wall to the man in the street.

It is this legacy of Georgian taste which seems to have taken possession of us now. The typical house built by a good architect is known by having nothing about it which can be called architecture; it is only to be good plain building. A white-painted wooden cornice, with modillions or dentils, may be allowed, and even a couple of pilasters may flank the principal entrance door; but beyond such embellishments nothing is allowed but plain brick walling and plain square-headed windows, and it seems to be considered best if the mass of the house forms an unbroken parallelogram. Thus we have a house free from any of the offences against good taste which were often found in the picturesque type of house of an earlier generation; but the merit, if one comes to think of it, seems rather a negative one. It is easy to avoid the charge of bad taste after getting rid of nearly every detail in which taste, good or bad, could be displayed.

No doubt, when we think of the terrible affairs which the French architects put up as country houses—those erections all over wooden fireworks in the shape of bargeboards and projecting eaves and huge mountains of roof, which appear in the Salon catalogue as “maison de campagne”—we may well be thankful that our English country houses, however plain, are at least no such monstrosities as these; but it is worth considering whether something more interesting may not be done with domestic architecture than merely to make it plain and inoffensive. To begin with, one may suggest that there is something to be said for stone, as a much more dignified building material than brick, and capable of much

more varied treatment in mouldings and in decorative detail. It is desirable to have something more of architectural dignity in house architecture than is provided by the combination of plain brick walls and white sash windows. Ornament certainly should be introduced only with care and reserve (a principle applicable to public as well as to private buildings) but it need not therefore be banned as an element at variance with sound taste. A dwelling-house, if it is the home of cultivated persons, should have some expression of architectural art and refinement about it. The form of dwelling-house which seems most approved by architects at present would really be more suitable as the expression of a farmhouse; and that is going too far in the revolt (healthy in a sense, we admit) against display and pretentiousness in house architecture.

Many of these houses of the farmhouse type contain, as already remarked, a great deal of refined detail in interior finish. But there are others, of which we frequently see illustrations, where the intention seems to be to symbolise internally also the life of the farmhouse. We see arched fireplaces of rough-hewn stone; chairs and tables of almost defiantly angular lines and heavy and clumsy proportions. This, which is supposed no doubt to be rebellion against the affected elegance of a once fashionable school of furniture, full of unnecessary curves, is itself a form of affectation. There is no good sense in transporting into the drawing-room the type of furniture of the kitchen chairs and dresser. Grace and finish in the lines and details of furniture for civilised life are virtues and not vices, provided they are combined with sound and workmanlike construction. The furniture of the Chippendale and Sheraton school, most of which was graceful in line, was equally remarkable for good workmanship; indeed, of some of the types of Chippendale chair it may be said that the workmanship was better than the design. What is really bad is showy furniture of cheap and flimsy structure, which may well be stigmatised as pretentious; but elegance combined with sound structure is not pretentious; it is only what is suitable for the drawing-room as contrasted with the kitchen.

In the general plan of the mass of a house symmetry is to be preferred to irregularity, unless the latter is very definitely suggested by something in the site or the special arrangement of the plan. But symmetry need not mean a mere parallelogram. No form of plan, perhaps, combines symmetrical dignity with a certain homeliness of character in a moderate-sized house than the old-fashioned English plan, with its wings and central porch. A plan consisting of two unsymmetrical blocks only partially connected at the angles may be a very suitable expression of the distinction between the living part of the house and the offices, but it is not always easy to make such a plan convenient in internal working.

What may be called picturesque fancies in house design are apt to become mere mannerisms, and lose whatever meaning they might originally have had. One type of house which has become rather common is the white rough-casted house with sloping buttresses (without set-offs) at the angles, a fashion chiefly set by one architect and followed by others.



This house was built for Sir Andrew Noble, Bart., K.C.B., and is situated close to the shores of Loch Fyne. The walls are of local yellow whinstone.
 FARDKINGLAS, ARGYLLSHIRE: VIEW FROM SOUTH-WEST. R. S. LORIMER, A.R.S.A., ARCHITECT.

Such buttresses are found occasionally in cottages in Dorset and elsewhere. There may in these cottages have been some practical reason for the feature, but in most of the modern houses built with them there is no reason whatever, except imitation of an old type, which is an affectation. So, also, in almost all cases is that application of timber to walling under the delusive name of "half-timber work," which is just what it is not; it is not a construction at all, being only *appliqué*. Genuine half-timber work was constructive, and was the result of circumstances; it was used where bricks or stone were scarce, and where there were no railways to bring these materials at cheap rates. In modern country-house or cottage building half-timber work is a mere pretence.

High roofs, under the pretence of looking picturesque, are also an affectation, and a very inconvenient one. The upper rooms of half the cottages in Letchworth Garden City are spoiled by the high-pitched roofs and the consequent cutting off of angles of the rooms by their valleys. High roofs were originally the result of lack of skill in carpentry and slating; there is no sense in imitating them now, when we can produce better work. The architects of the modern plain brick dwelling-house have, in fact, given them up for the most part, and build roofs of reasonable pitch. They might very well go a step further in these days of reinforced concrete and try to produce an agreeable and architectural

form of house with a flat roof. It is a problem waiting for architectural solution.

There are some fancies with the modern small house which are open to question. One of these is a fashion for very low rooms. It is true that Victorian houses often had their rooms too high, both as regards appearance and comfort; but to say, as we have heard it said, that "you cannot have rooms too low," is going to the opposite extreme; it is all part of this craze for making dwelling-houses look like farmhouses. A room only just high enough to stand upright in is neither comfortable nor healthy. Small windows are another affectation of the day, and also unhealthy and inconvenient, though no doubt combining to give the farmhouse aspect which seems to be so much desired. Thin walls, we suppose, cannot be called an affectation, for they are prompted by economy and a desire to persuade clients that a first-class result may be had at a less cost than they had been wont to believe. But it is one of the defects of the domestic architecture of the period, that walls are reduced to their least possible thickness. Really comfortable houses are not attainable in that way.

What the modern house needs at present is both more solid structure and more dignified architectural treatment, and for the latter object it should be considered whether there is not too much use of brick and rough-cast and too little use of stone.

"Truth" and the Architects.

THE Editor of "Truth" is not often caught napping, but in last week's issue of his delectable journal he delivered himself, on the St. James's Park question, with the petulance and imperfect cognition which commonly attend disturbed somnolence. To his half-opened eyes and dazed vision the Mall presents itself as "a barren, wood-floored motor track," and he exclaims irascibly that "we shall wake up one morning to find the contractor in possession, the hoardings up, the trees coming down, and the steam navvies, with their human assistants, starting on their work of devastation. A few months more, and a matchless piece of sylvan landscape in the heart of London will have been transformed into a magnified duplicate of Trafalgar Square. That is the architect's idea of an improvement." From this specimen of Truth as she is journalised, it is no doubt a legitimate deduction that "An Act ought to be passed making it a criminal offence to employ any architect in a London park for any purpose whatsoever," and it is quite "in a concatenation accordingly" that the editor whose occasional awakenings seem to be fraught with half-remembered dreams of vandal architects conspiring with devastating steam navvies should further shriek aloud, in his moment of obfuscation, "I would not object to a clause providing that any architect found guilty of preparing a plan for the improvement of a park should be hanged." If a similar, and perhaps more clearly justifiable proposition, put forward years ago with regard to editors, had received legislative sanction, the pleasant duty of applying it to architects might conceivably have fallen into less worthy hands. Sad indeed were it if in these or any other circumstances the righteous indignation and the caustic humour of Mr. Labouchere were lost to us. At the worst he does but magnify "Truth." His main object in the present instance, indeed, is quite excellent; but we venture to remonstrate that he is as wrong about the attitude of the architect as he is about the facts in the St. James's Park. In both instances his strictures are based on misconception. His idea of the Park scheme seems to have been derived from discredited rumours, his estimate of architects from exaggerated reminiscences of an obsolete type of the genus. His notions on the subject are perhaps biassed by his very intimate knowledge of the architectural diversions of Pope and Horace Walpole in the vicinity of Strawberry Hill, and we take leave to assure him that, the ideas of Pope and Walpole on the treatment of parks and gardens being no longer current among architects, his swashing blow at that unhappy tribe, whose badge is sufferance, is unwarrantably delivered. For any mischief that may arise in the parks, or for any night-mare apparition of steam-navvies or wood-floor motor trackers that may chance to appear therein, it is absurdly unjust to cast the blame on architects, whose opinions on such matters are commonly and persistently overridden or ignored. We should have credited a publicist of Mr. Labouchere's experience with a clearer perception of the real state of affairs, and we like not to see him incontinently "barking up the wrong tree."

Dry-Rot in a Yorkshire Asylum.

THE flooring on the ground floor at Naburn Asylum, York, having shown indications of dry rot, the City Surveyor and the Engineer to the Ouse and Foss Navigation were instructed to prepare independent reports as to the cause of the defect. The City Surveyor's report states that on the floors dealt with it was found that rot had first commenced in the joints bedded in concrete, the rot afterwards spreading to the boards above. Moist heat appeared to be the cause of the trouble, the moisture coming from the ground under the concrete and the heat from the steam-pipe subway, of which there was a very considerable length laid either directly under the floors or immediately adjoining them. The Engineer points out that it was not to be foreseen that the heated air

in the subways would be the means of transmitting heat to the ground behind the subway walls. There could be no doubt but that the ground had been so heated, and that this heat had in turn been transmitted to the concrete and joists, and in the absence of ventilation (which was not necessary in a solid floor) had set up dry rot. It was a piece of sheer ill-luck, and would not, he felt certain, have occurred under any other conditions, minus the moist heat from subways. He recommends the removal of the whole of the affected timber; all timber in which rot has not commenced to be coated with a solution of sulphate of copper, more especially in proximity to affected timber. The Asylums Committee have decided to proceed with the work at once.

The St. James's Park Controversy.

OWING either to incorrect information on the part of the newspapers or to the gratuitous assumption on the part of some people that something was going to be done which they would not approve of, there has been what Sir Lucius called "a very pretty quarrel" in the Press over what turns out to be rather an imaginary grievance. Visions have been conjured up of a huge embankment and a carriage bridge crossing the little lake in St. James's Park, and dire threats and cries of "vandalism" have resounded. It appears that what is really intended is on no such formidable scale. It is proposed to place the monument to the late King in a small square clearage interrupting the avenue on the south side of the Mall, and cutting into the boundary of St. James's Park, so as to place the monument on the centre axis facing Marlborough Gate. Then the walk behind the monument leading down to the present suspension bridge would be effaced to make way for a straight walk continuing the axis of Marlborough Gate down to a new stone foot bridge to be built a little eastward of the present suspension bridge, which would be removed. The new walk would be continued, beyond the bridge, to a small *round-point* near the railing of Birdcage Walk, out of which two smaller walks would radiate, one of them leading to the present gateway opposite to the entrance to Queen Anne's Gate.

Though it is hardly an ideal situation for the monument, we do not see in all this anything to spoil St. James's Park, provided that the new straight walk follows the slope of the ground and is not raised on any embankment, and we do not gather that this is intended. The little square round the monument will not abstract any material area from the park, and what it does take will still be public ground, and may be (should be, in fact) laid out with flower-borders. So far as the bridge is concerned, we certainly prefer a stone bridge designed by an architect to the present commonplace suspension bridge; and the small circle near the Birdcage Walk railing could be made the position for a fountain or other decorative object.

There is no reason for such a scheme as this to be denounced in somewhat intemperate language, as spoiling St. James's Park; on the whole, it would rather improve it. Lord Carlisle, one of the most bitter critics of the scheme, seems to imagine that the winding walks of St. James's Park are a special beauty, and is afraid that the new arrangement will reduce the lake to its former condition when it was a straight, canal-like piece of water. He does not seem to be aware that most persons who are concerned with the ornamental treatment of grounds would prefer that to the present mock-natural lake. Another critic, we observe, endeavoured to injure the scheme by suggesting that Mr. MacKinnell was an obscure sculptor, whereas he is undoubtedly one of the ablest English sculptors of the day (for we may claim him as English now, though he is an Australian by birth). With Mr. Lutyens, who is one of our most talented architects, associated with him in the work, we have no doubt that it will be well carried out, and the storm of invective which has been raised against the scheme by people who did not know what was going to be done, and

apparently could not understand it when they did know, is rather ridiculous.

The situation is not, nevertheless, an ideal one for the monument. The ideal one would have been the formation of a circular *place* continuing the line of Sir Aston Webb's building at the east end of the Mall and placing the monument to King Edward in the centre of that space, facing the archway.

American Capitols.

THE partial destruction, by fire, on March 29th, of the New York State Capitol, at Albany, will be regarded with mixed feelings by lovers of architecture. Since the days of Henry Hobson Richardson, who, having spent several years in Paris studying for his profession, returned to the United States in 1870, and at once raised a vigorous protest against the employment of engineers to design such buildings, the New York State Capitol has been held in something like scorn for its lack of architectural character, while there are many who declare that its demerits are not merely negative—that in fact it is a positive eyesore, and that burning was therefore the best thing that could happen to it: which is a hard saying. The Capitol is a great white granite structure, covering about three acres, and is said to have cost £5,000,000 to build. The entire west wing has been destroyed, and with it, unfortunately, many valuable historical records and relics, as well as the State Library. The damage to the fabric alone is estimated by the State Architect at a million and a quarter sterling. The foundation stone was laid in 1861, but the building was not completed until 1879. The term "capitol," as employed in the United States for a building in which legislators deliberate, has a fine classical flavour, but is too homonymous with "capital" to be altogether convenient in use, and in particular is a deadly snare to printers. Nor is it surprising to find that many English newspaper readers, on learning the fate of the New York Capitol, received the absurd impression that the National Parliament House of the United States had suffered it. "*The Capitol*," of course, is at Washington, and is a building of which, in spite of its defects, few would have the hardihood to say that it would be none the worse for a little burning. The Capitol at Washington was built in 1827, when it consisted of a centre and two wings, with three low domes, the Senate occupying the northernmost, and the House of Representatives the southernmost wing. Between 1851 and 1865, two new wings were added, into which the two Houses of Congress moved; and the building was then crowned with its lofty dome, which is constructed chiefly of wrought and cast iron, and reaches the height of 290ft. What will be done with regard to the damaged New York State Capitol at Albany it is as yet too early to say; but it would not be greatly surprising if, with characteristic energy and thoroughness, New York were to determine to make the most of this occasion by erecting an entirely new building that should be in every way more worthy of the State, and should faithfully reflect the high degree of scholarly excellence to which the American architect of to-day has attained.

The Functions of an Assessor.

SOME familiar but rather delicate questions have been once again raised with respect to awards in competitions. Marylebone Borough Council, as our readers have been already made aware, contemplate building a town hall, and they propose to invite designs in open competition. But the town hall committee have special views as to the appointment and functions of the assessor. They wanted, in the first instance, to have a wider power than is usually accorded as to the choice of an assessor, and they then desired that the final selection of the design should be left to themselves. The R.I.B.A. met them so far as to consent to nominate three architects from whom the committee might select one, the further concession being granted that two

members might be associated or confer with the assessor before the final choice of design was made. The committee made recommendations to the Council to this effect; but when the matter came before the Council for discussion, an amendment was put forward with the object of securing the right of the Council to make the final selection from four designs to be recommended by the assessor. An alderman strongly expressed the opinion that the final selection should rest with the Council, but the sounder view prevailed that the assessor must necessarily possess more skill and experience than a council of laymen, and that his guidance should therefore be accepted. It is very natural to encounter a restatement of the common fallacy that those who commission the work should make the final selection, but it is very gratifying to find that the undeniable speciousness of such a plea was not allowed to prevail. For excellent reasons that it would be superfluous to recapitulate in detail, the assessor should be implicitly trusted; and we are rather disposed to deprecate even the slightest interference with his absolute freedom which seems to be implied by the admission of two councillors to confer with him. It may be admitted, however, that their knowledge of local conditions may possibly be of service to him, provided their advice is strictly limited to matters of use and convenience, and that purely architectural considerations will be left solely to his determination; but nevertheless the precedent tacitly favours a view that it is by no means desirable to encourage.

Barnsley's Practical Memorial Schemes.

THE citizens of Barnsley are distinguished even among Yorkshiremen for practicality. A memorial to the late King Edward being inevitable, it is proposed "to seize the opportunity for bringing Barnsley in the matter of its municipal buildings thoroughly up to date." It is proposed to invite competitive designs for a new town hall; and the editor of the "*Barnsley Chronicle*" pays the profession a handsome compliment by confidently assuming that "in this way the best possible results may be secured, for the plans which will be thus forthcoming are sure to illustrate strikingly the chaste in architecture and elevation, skill in the arrangement of light and ventilation, and the beautiful in façade." It is to be hoped that this intelligent anticipation will be amply justified by the event. The Barnsley Town Council have also in contemplation a new scheme for public baths, and with the object of acquiring practical information on the subject, have authorised the Sanitary Committee to visit and inspect the public baths in Hull, Bradford, Manchester, and Sheffield; which is the right way to set to work, although it might possibly be advantageous to extend the area of the investigation.

The Late Mr. Ernest Crofts.

ALL who have been in the habit of attending lectures at the Royal Academy will feel the greatest regret at missing the familiar and friendly figure of Mr. Ernest Crofts, who, in his office as "Keeper" of the Royal Academy, has filled the chair at these lectures for many years. His pleasant and courteous manners must have made him liked everywhere, but he leaves also the memory behind him of a gifted and effective painter of battle scenes, in the preparation of which he took a great deal of pains to get at and to realise the historic facts; and we must protest strongly against a totally unjust summary of his art, in which he has been described as the painter of stagey and conventional battle-pieces. "Stagey" was exactly what they were not; they were far more real than battle pictures generally are. In his picture of "Marlborough after Blenheim" he produced a figure which seemed a summary of Marlborough's character; and his picture of Napoléon before Waterloo, consulting a map by the light of a tallow candle in a hut, the orderly dragoon waiting outside with the rustic informant tied to his stirrup, was an equally good glimpse into the realities of military history.

SCULPTURE & ARCHITECTURE*

BY W. S. FRITH.

The discussion of the relation of sculpture and carved ornament to architecture is necessarily directed mainly to that interesting series of instances where the art of form finds its fullest expression through the harmonious co-operation of both its branches: for though sculpture and architecture may each have its own definite sphere, and is in that sense independent of the other, it is when acting together in harmony that each is recognised as attaining to its highest achievements.

Art of Form.

These periods illustrate that, architecture and sculpture being phases of one art, their excellence is largely interchangeable, and that, when working in entire sympathy and understanding, the art of form is effectively presented, because it is then presented in its entirety.

The Egyptian, the Assyrian, the Greek, the Roman, the Gothic, the Renaissance periods are all distinguished by the presence of an adequate sculpture, in sympathy with the æsthetic theme of the architecture, much in the same way as a song and its accompaniment.

It has been suggested that all art is one, and that therefore the architect, sculptor, and painter should be united in one person. There are so few instances, however, of this being done with success, that these instances constitute the exception rather than the rule; and, judging by the amount a sculptor has positively to learn, and the difference of standpoint his phase of art demands, there is in the author's opinion little probability of the artist in either branch really possessing more than a smattering of knowledge in the allied arts.

The Early Use of Sculpture.

The early use of sculpture would appear not to differ essentially from the present—namely, that of assisting to realise an object or event, a person or an abstract idea; and it still appeals as having qualities which give it predominance as a nucleus around which the associations and memories of a person or event may congregate. Ruskin thought that to make things in real volume is a primary human instinct.

The subjects of the Egyptian were historical records of the kings and their achievements, the representations of their various deities; and there are some very interesting and realistic portraits of priests and other people of importance. Most of these minor works are in wood, but their treatment is similar in character to the granite work, and perhaps for this reason suggests their being thought out in granite.

The Assyrian works are much the same in subject, the records and doings of the kings, their deities, and their sports. Those depicting lion-hunting are of exceptional vigour in treatment and expression, as might be expected of a sport-loving people.

Of the Greeks, the sculpture was mainly devoted to the service of religion; and as the worship of beauty formed a not inconsiderable part, we find this reflected in the humanising of their deities, and the effort to represent these of the highest physical development, beauty, and dignity: an effort which eventually developed that magnificent school of sculpture which is



BYSTOCK, EXMOUTH: THE HALL. WIMPERIS AND BEST, ARCHITECTS.

still the wonder and the admiration of the world.

Although Rome continued much the same theology, the impulse of the people being different, the real seems to have had more charm than the ideal, and we find a development of portraiture, and a careful rendering of detail—the things which *are* matter rather than the things which *might be*. We get an actual Hadrian in his statue, and it is a fine statue. We find also a development of the minor forms of sculpture; foliated ornament especially gained in importance. Greek carved ornament was much more restrained, and seems designed rather for effects of light, and of conveying through its texture the effects of lace-like enrichment on a solid structure. While the Roman is distinguished by vigour and boldness of design, the capitals of the Pantheon may be taken as typical of Roman ornament, which has remained the dominant type in use for palatial buildings to the present day. Generally, Roman sculpture conveys the impression of being used rather for its decorative value as an adjunct to luxury rather than, as in the Greek, for the love of art and for the delight found in seeking for its higher development.

Byzantine and Gothic.

The break-up of the Roman Empire coinciding with the change of faith—and that faith one in which the ancient sculpture was considered idolatrous—together with vast social disturbances, brought about the disappearance of the architecture and sculpture identified with ancient Rome. After an interval arose the Byzantine order, in which, while sculpture served to record the persons and the faith, this was effected in a way rather symbolical than personal, and in architecture its principal use was to assist to produce pattern, texture, and rhythm, in the general composition. The statues from Chartres Cathedral are a good instance of this, as also is the portal of Rheims, which, though of later date, carries on the same traditions, and as an example of design must be considered a masterpiece. This system of using sculpture affords considerable opportunity for the introduction of a variety of scales in the figures, a device not exclusively Gothic, but of which considerable use is made in all its varieties. The harmonious contrast of broad surface with broken surface, of lines with fret, and curved with straight line, while preserving the general structural idea, is one

* Substance of a paper on "The Relation of Sculpture and Carved Ornament to Architecture" read by Mr. W. S. Frith before the Society of Architects Bedford Square, on March 9th.

which provided the artists with material for some centuries.

The many examples the various cathedrals afford are well worthy of long and continued study, and it is the conviction of all who have been interested in the Gothic phase of the art, that it is not only what has been done that is of interest; they feel that there is here a mine of knowledge and suggestion capable of immense future development.

The Percy tomb is a fine example of English work under this general influence; the way in which the whole weaves together, the arrangement whereby the structural idea carries through, and is borne out by the foliated and moulded enrichment, and the way in which the composition is varied and completed by the figures, together with the grand treatment of the foliated enrichment, are worthy of all praise.

The Revival of Classic Art.

The revival of classic learning in Italy, and the revival of classic art which followed it, cut short the independent development of Gothic, but not without there being effort to blend the two; as in the art of Northern France, and in that called the style of Francis I.

Italian artists never took kindly to the Gothic idea of the human figure represented merely as a symbol (as it were a letter in the alphabet), but even in their early work they felt and represented the strivings of the individualistic spirit within. Although the work of Nicola Pisano and his school approximated to the texture scheme of the Gothic sculptors, there is yet a feeling for form and movement which differs from these; and in the work of Ghiberti, Donatello, Verrocchio, Lucca della Robbia, Rossellino, and many more, and above all Michelangelo, the details become lost in the grand effort to realise to the fullest the conception of the mighty spirit moving in the divinely formed body; the work arriving at a stage when it is its emotional aspect rather than its architectural that enforces attention.

Though the spirit of art is indefinable, and may be considered as a vision apprehended not by any means by the eye alone, ("On an unimagined shore . . . she met me in such exceeding glory that I saw her not" [Shelley: "Epipsychidion"]) the efforts to realise this vision, which result in works of art, are found to conform to certain general rules: with reference to which in reading a musical book lately, the author found a definition of the qualities a work in that form of art should possess, which seems to him to the point; it commenced by saying Form, Expression, Feeling, and Variety were essential. *Form*, the shape presented to the mind; *Expression*, the prominence given to some sounds and the subordination of others; *Feeling*, the character of the effect produced; and *Variety*, to prevent the work becoming mechanical and so lifeless. It further states a melody should display amidst all its features and phases an all-pervading unity and relationship among its several parts. The text then proceeds in criticism of a certain arrangement, as wanting in design in its form, regularity in its expression, stability, or clearness in its feeling, and method in its variety. These directions seem so admirably adapted to the art of the sculptor and carver, that they might well have been written expressly for him, except that being written about musical composition they make no mention of the artist's hand, which—the human and executant element—in the graphic and plastic arts neces-

sarily occupies a very important place indeed.

For examples, from Certosa at Pavia the author thought it could be claimed that the all-pervading unity and relationship is preserved, and that the less important elements are treated with due subordination, that the varied textures and minor ornamentation are treated in an interesting and able way indicating great ability in design and very skilful execution. Much the same as to general design and importance given to some and the subordination of other portions could be said of the altar from Vicenza. In two doorways from Como he found a more marked distinction in design; the artist seems to be possessed of a more varied palette, the rhythm is felt throbbing more harmoniously throughout, and there seems more room left for the imagination to play in. And here it may be remarked that a work may be so obviously finished that, no point arising to call for comment, we simply pass it by and are much more interested in the less complete. This brings us to the question of variety. Lord Bacon in one of his essays remarks: "There is no beauty but hath some quality of strangeness in it." It may perhaps also be said that we do not recognise beauty in that which is altogether strange, and it is the *just proportion* of strangeness, harmonised with that which is *familiar*, which constitutes the charm.

Imitation Balanced and Controlled.

How is this charm of the familiar and the new to be obtained? By a search through the realms of Nature, by developing a helpful imagination, and by acquiring the power to imitate, together with the power to invent, and to express or rather to reveal your discoveries with a skilful hand. Imitation alone is not sufficient; it must be balanced and controlled. In the Gothic period, the direct imitation of leaves, as in Early Decorated, soon ceased to satisfy, and developed into the more rhythmical Perpendicular.

In the Renaissance period, the most satisfactory arrangement of ornament was found to be (where direct imitation was used at all) to obtain the necessary architectural quality by a considerable dominance of conventional form, and this occurs even in the extremely free treatment of Grinling Gibbons. The principles applying to the figure are not identical with those of ornament, but the author thought that in the Greek work the contention that the earlier and less realistic work is the best fitted for architectural purposes could well be maintained. And in the Gothic period the unity of the whole could not have been preserved except the sculptor's convention permitted the lights and shadows to be of the right size and shape and to occur in the right place, three things of which imitation can take no heed.

The Amplification of Surfaces.

On this question of harmonistic treatment, which really embraces the question of distance effect also, M. Camille Maclair writes in his work on Rodin: "This theory to which Rodin approved of my giving the name of 'deliberate amplification of surfaces' is simply the critical principle of Greek sculpture, which has been entirely misunderstood by the Academic School. That school, which is supposed to honour the Greeks, is really false to their spirit and their teaching. Moreover, this principle, which belongs to all primitive statuary that was made for the open air, is to be found among the Egyptian and the Assyrian. It calls in question the Academic Tradition, whereby exactitude is confounded with truth." The Well-

ington Memorial, probably the finest monument in existence, was cited as an example of great care devoted to the arrangement, design, and treatment of light-and-shade-bearing surfaces, practically coinciding with the Rodin view. In a Michelangelo example shown on the screen it would also be found that the dominant feature was the light-bearing surface finely defined by the broad grouping and design of the shadows; and, indeed, this might be accepted as one of the most important elements in the means of expression of the art. This may be considered as rather appertaining to the craftsmanship. Of course, craftsmanship is after all only the servant. Something more is required in a work of art, something on which the human mind can work; for in all real art it is essential that, underlying the mere representation, the working of the directing mind and the touch of the executing hand should be evident. In certain work the skill of the hand is alone sufficient to justify the work. In the Roman stucco, for instance, how great a charm is imparted by the hand traces left upon them.

In the work of Rodin, how much does it owe to the same cause; and in the work of Michelangelo, how do those parts so called yield unfinished traces of his consummately skilful hand moving as directed by his mighty brain—it brings the thing home to us, and seems to place us in immediate touch with the artist working at those grand conceptions, which for four hundred years have filled so large a space in the history and development of art.

PICTURE EXHIBITIONS.

Society of Painters in Water-colours.

The exhibition of the Society is a little disappointing in regard to the work of some of its best members; Mr. North does not exhibit; Mr. Eyre Walker is not quite up to his usual mark in landscape; and Miss Fortescue Brickdale's admirably painted picture, "Jack the Giant Killer"—otherwise Cupid aiming his shaft at a sturdy navvy, who looks away from his work after some unseen fair one—is not so interesting in a poetic sense as some of her works. But there are compensations enough to render it a remarkable exhibition, especially in regard to landscape. Mr. Colin Phillip has never painted anything finer than his two grandly built-up pictures (they always seem to be built rather than painted) "May Morning, Isle of Skye," and "Glen Brittle, Isle of Skye." In quite another style of handling Mr. Robert Little produces an equally grand landscape in his "After the Storm, Château Gaillard," in which we seem to escape from pigment altogether, and see mountains in a hazy effect of floating colour. Mr. Little's landscapes are always remarkable for a kind of inspiration in colour, for which see also his smaller work, "A Norfolk Duckpond," a mere country road scene transfigured by the power of art into a colour effect which few ordinary beholders would realise, but which is there nevertheless for the eye that can see it. Mr. Cuthbert Rigby exhibits one of the finest landscapes he has ever painted, "Snow-showers on Sca-Fell Pike," which reminds one a good deal of Alfred Hunt in a similar class of subject. There are many very good landscapes of what may be called the average type, among which Sir E. Waterlow's "A Coming Shower," though not quite rising to the poetry of landscape, compels admiration by its admirable composition, a quality of landscape design in which he is never wanting.

Among the figure pictures, or those in which figures are a predominating interest, Mr. Hughes's picture of a twilight fairy procession watched by a girl who plays a pipe in the foreground, is, in colour and poetic effect, one of the finest of his fantasies. Mr. Sims is trying over again in water-colour the kind of effect of his "Fountain" picture in the Academy—a medley of colour and figures in which a decorative pattern is the main object. As to colour he has done even better in "The Wedding of Sylvanus," but why did he spoil it by that absurd colossal head among the trees? Mr. Cadogan Cowper gives us a half-length of "Eve"—a mediæval Eve, with the serpent twined round her; a remarkable piece of painting at all events. Mr. Anning Bell's picture of the two Marys watching the sepulchre, much less remarkable as a piece of technical painting, has the higher quality of solemnity and pathos. One of the most recent members, Mrs. Laura Knight, makes her greatest success hitherto in "Sun and Wind," a large sea-side landscape of remarkable breadth and freedom; and among sea pictures Mr. Napier Hemy's "A Summer Day" is perfect. A picture one cannot pass over is Mr. Paterson's "The Last of the Indomitable," a medley of old ships and brown towers which is "impressionist" to such a degree that it is difficult to unravel; but as a symphony in colour it is most remarkable.

There is a good deal of good painting of architecture: a lovely little view of Venice, a kind of miniature picture, by Mr. Albert Goodwin; two fine and learnedly drawn interiors of Lombard churches by Mr. Rooke, and several of Mr. Barratt's fine paintings of Venetian architecture, even better than usual. Mr. Thorne-Waite has made a good landscape with Salisbury Cathedral for a centre, but the spire (as is often the case in pictures) is not set quite straight on the tower. The first thing an architect would do in making such a view would be to draw in the vertical centre line of the tower and spire; if painters would take this precaution they would find it safer.

The Goupil Gallery.

Mr. von Glehn's water-colours at this gallery are obviously imitations of the manner of Mr. Sargent in his broad impressionist sketches of architecture and ships; and they may be said to be good imitations. The oil paintings we can only regard with rather mixed feelings; they are clever, but dry and uninviting in texture. There is, however, a fine colour scheme in the large portrait of a lady, and the "Still Life" painting is as good as possible. In the upstairs room is a collection of works by several artists, most of whose names are new to us. Among these Mr. Patrick Adam, R.S.A., who deals almost entirely with interior architecture, shows excellent pictures of this class. Miss Thea Proctor is apparently a kind of imitator of the late Mr. Conder in fan designs, but her figures are much better drawn, and the separate chalk studies of figures (chiefly ballet-dancers) are clever, though ugly. There are some good landscapes among the exhibits of Mr. Gwelo Goodman and Mr. Friedenson; the others present little to care for.

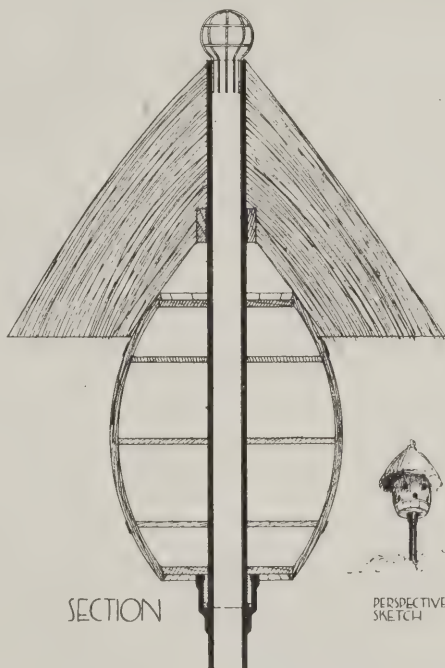
Library, Possilpark, Glasgow.

The awards in this competition are announced as follows:—1, Mr. George Simpson, I.A., who will be appointed architect for the work; 2 (£30), Mr. W. B. Whitie, I.A.; 3 (£20), Mr. Thomas S. Allan (all of Glasgow).

TREATMENT OF A VENT SHAFT.

It sometimes happens that in the execution of drainage works in connection with country houses, it is necessary to erect in a conspicuous position, within the limits of a relatively small site, a ventilating shaft which does not form a pleasing addition to the outlook. An ingenious expedient to relieve the stark appearance of this necessary but unlovely object was observed recently, and is worth recording. It accomplished its aim, and as it does not seem to open to any real objection, it may be serviceable to others faced by a like difficulty.

Over the top length of the iron ventilating pipe a barrel was threaded, resting on the socket of the length below, its interior fitted with divisions and pierced with openings. The portion of the pipe protruding through the barrel top is embedded in a conical



thatched roof, above which the copper wire balloon grid on the vent shaft inconspicuously appears. Result—a dovecot, and, moreover, a habitable one, since the pigeons do not appear to be troubled by their curious support. The accompanying sketch will serve to make the arrangement clear.

OBITUARY.

Sir Caspar Purdon Clarke.

We regret to record the death of Sir Caspar Purdon Clarke, who died last week at his residence in Earl's Court. He had been in poor health since his return from New York about two years ago. Born in 1846, and, educated partly in England and afterwards in France, he began his artistic career in the Art School at South Kensington. Trained as an architect, he filled various subordinate posts under Government, at the Houses of Parliament and also at the South Kensington Museum; but his personal tastes seem always to have been attracted towards the East. He held several commissions for collecting works of art in the East for the Museum, and represented the commercial side of the Indian Government at the Great Paris Exhibition of 1878. His first definite appointment in the Museum where he worked was in 1880,

when the India Office handed over to the Museum the vast collections of modern Indian art that had long been shown in one of the galleries fringing the Exhibition Road. As Keeper of these collections Clarke found a congenial field, and the first arrangement of the galleries was due to his very wide knowledge of the arts of the East. His success here led to his appointment later to the charge of the entire art side of the institution, and ultimately, in 1896, he was appointed Director, and held the post until, on the approach of his sixtieth birthday, the opportunity arose for him to succeed Major Cesnola at the Metropolitan Museum in New York, where he became very popular. He possessed immense energy, and a great knowledge of the technical side of Oriental arts and crafts; on these and on a host of other subjects he constantly lectured, and he was constantly engaged in the plans of the many exhibitions that have been held in London during the last quarter of a century; he built Alexandra House for students of music at the Albert Hall, and was often named as delegate or commissioner at exhibitions abroad, such as Vienna, Paris, and St. Louis. Sir Caspar Purdon Clarke was knighted in 1902; he had received the C.I.E. as far back as 1883.

The Late Mr. Benjamin Walmsley.

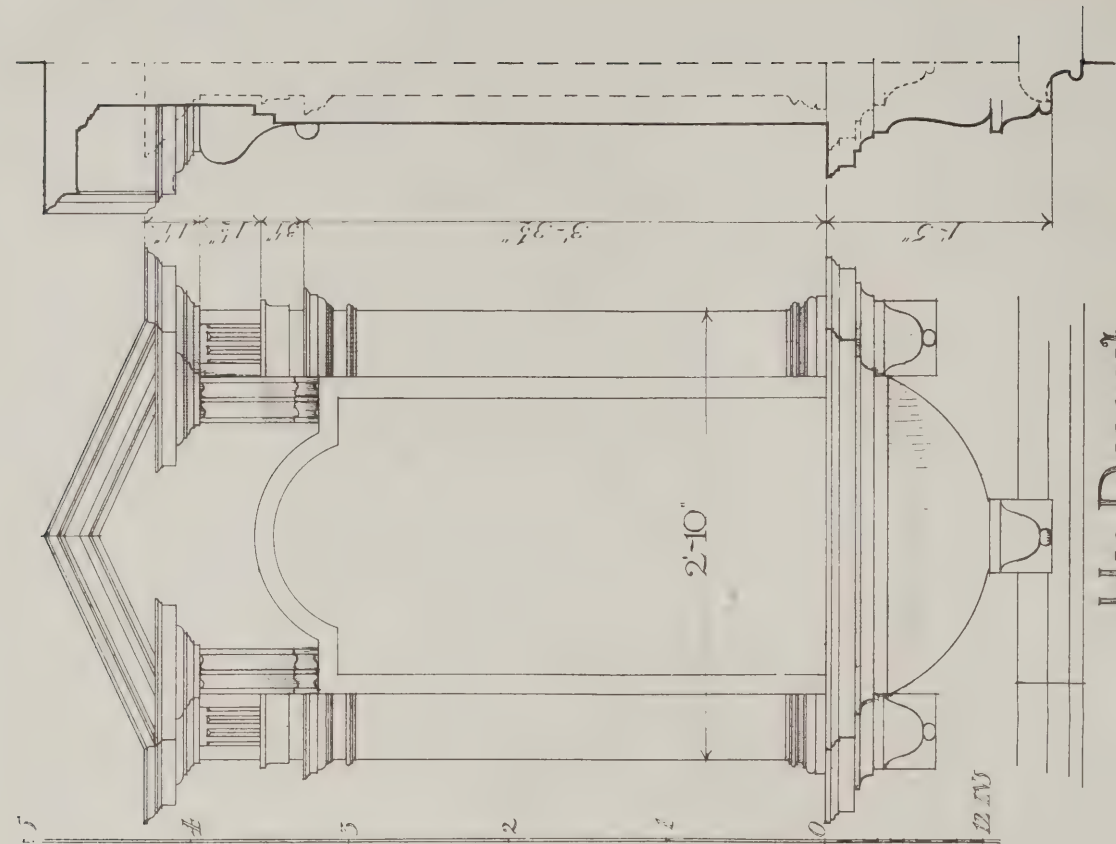
* The late Mr. Benjamin Walmsley, of Wallington House, Cardigan Road, Leeds, builder, left gross estate of £139,730.

DETAILS—OLD AND NEW.—III.

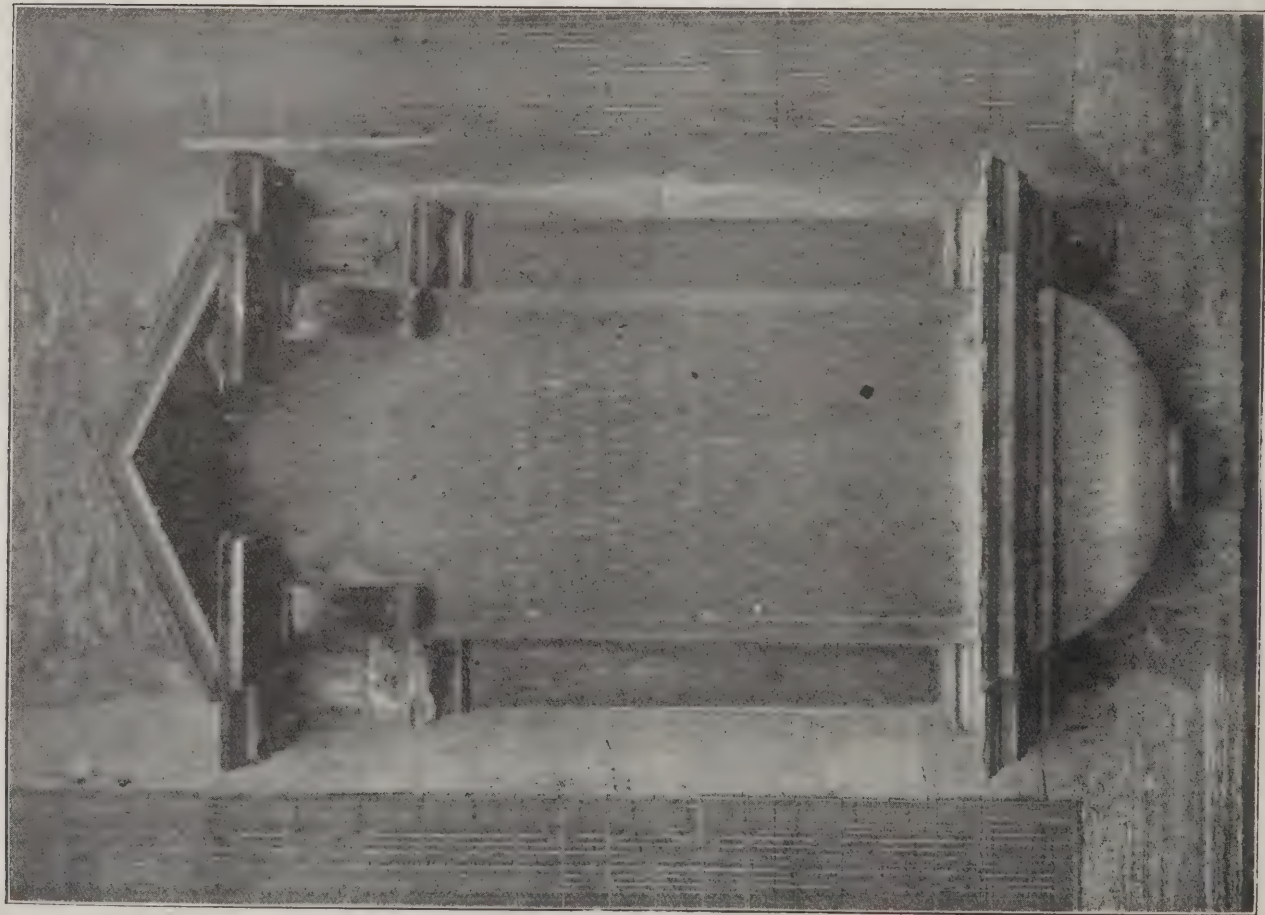
WALL MONUMENT, FARRINGTON CHURCH

The course of Renaissance history could be easily traced in these wall monuments, from the days when Torrigiano worked in England to the end of the century before last. In the early days of the seventeenth century choice marbles and alabaster heraldry, painted and gilt; and quaint devices and conceits, compacted these memorials, adding another interest to many an old church. They are sometimes curiously fitted on to round pillars, sometimes put flat against the wall, and altogether display ingenuity, skill, and artistry. Splendid carving, too, was often used with the richest effect. These more elaborate monuments have their fitting place in the interior of the church. Simpler designs had perforce to be adopted for the outside. The small monument from the east end of Farringdon Church, shown by the accompanying illustrations, is made of stone. Its design is of the simplest—the plain, circular-headed panel, with a framework of the usual Renaissance pattern. The small brackets which carry the pediment are rather happily introduced, and give it a projection like a sheltering hood. Under the base moulding is a curiously shaped corbel, obviously a relic of some vernacular feature, and neither inadequate nor displeasing. It seems a pity that sculptors who deal in those "trappings and suits of woe" do not consult these old monuments. It would certainly not detract from bas-relief or bust to be placed in a well-designed and simple frame, and it might suggest something in place of what is too often fearfully and wonderfully made—a portrait bust of some deceased person. Better the simple inscription and ornament of amorini and flowers.

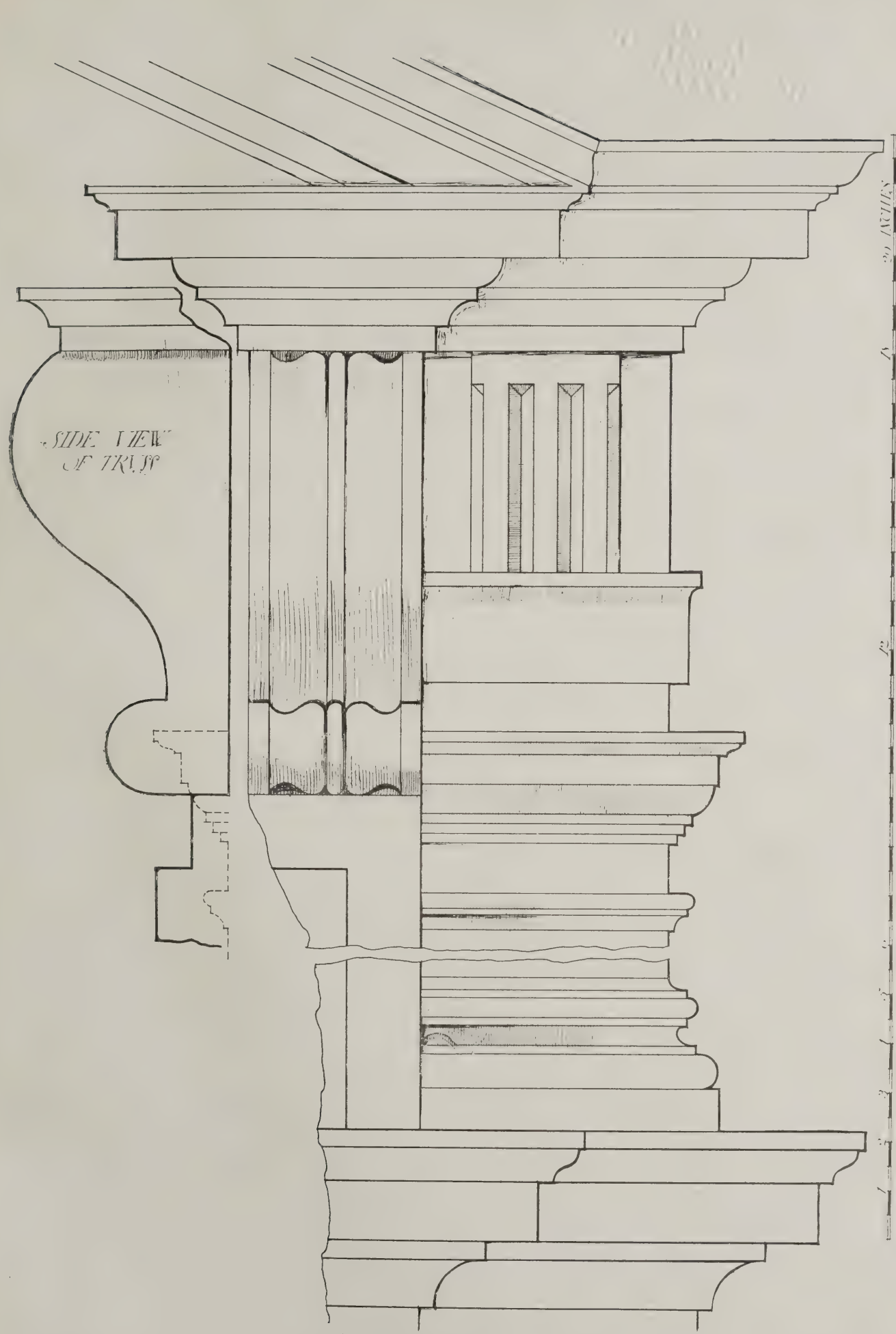
J. M. W. H.



Hic Dormit
RICHARDUS PEERS
AD 1739



EXTERIOR WALL TABLET, FARRINGTON CHURCH MEASURED AND DRAWN BY J. M. W. HALLEY.



EXTERIOR WALL TABLET, FARRINGTON CHURCH: DETAIL. MEASURED AND DRAWN BY J. M. W. HALLEY.

CORRESPONDENCE.

*"French and English Cathedral
Architecture."*

To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—In your article on "French and English Cathedral Architecture," in the issue for March 22nd, you give, in a small compass, an extremely interesting and useful comparison of the two types, drawing attention to the main points of difference, and, what is more important, discussing from the architectural point of view the relative merit of the forms and methods adopted.

One statement in the article, however, seems somewhat misleading, and in order that the point may be made quite clear I quote it: "A point in which French Gothic is inferior to English is in the fact that the principle of growth from the ground line is less completely developed. The French habit of starting a vaulting-rib with a special base of its own, standing on the cap of the main arcade piers—as may be seen in the interior view of Soissons, for example—gives a far less complete effect than the English habit of running up the vaulting-shaft continuously from the ground line."

Is not the following a more accurate statement of the case?

(a) In French Romanesque work the vaulting-shaft was usually taken right down to the ground: whereas in English Romanesque this was done in some cases but not in others.

(b) In early French Gothic the circular pier was used with the awkward arrangement of the vaulting-shaft resting on the capital, as at Notre Dame, Paris; but in later work it was more usual to take the shaft down to the floor. In some examples a transitional stage may be noted, as at Soissons, in which a slight shaft was placed in front of the circular pier, but it is a shaft which appears inadequate to support the heavy shafts resting on its capital (see illustration on page 201 of your issue for March 22nd). In Laon Cathedral some piers are treated similarly; in Noyon and Sens alternate piers are circular, but the others have vaulting-shafts taken down to the floor; and in Le Mans the main piers have continuous shafts going up to the rather clumsy transverse ribs, while the circular intermediate piers do not come under vaulting-ribs.

(c) In English Gothic, the usual arrangement is that in which the vaulting-shaft rests on a corbel which projects from the wall above the capitals of the nave piers. While this is, without doubt, a better method than that adopted in the French early Gothic cathedrals, it is doubtful whether it is as good as the method usually adopted in fully developed French Gothic, in which the vaulting-shaft comes down to the ground.

In some cases, it is true, the vertical lines of the vaulting-shaft are slightly interrupted by horizontal ones at the capitals of the nave arcade, but this is not, I think, a serious defect, if indeed it is a defect at all.

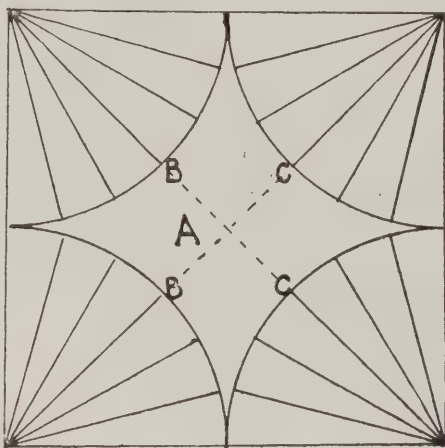
W. S. PURCHON.

The University, Sheffield.

To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—In your very interesting editorial article on the above subject—with the greater part of which I agree—you make the following statement: "The fan vault is indeed a beautiful and artistic form of roofing of which the English may be proud, and here the moulded ribs are all used in

the same manner, and form a consistent design, but it is consistent in the sense that none of them have anything to do with the construction at all; they are merely effective and expressive decoration." To this statement I must take exception. Considering the plan of the fan vault shown by the accompanying sketch, it will be seen that the central rib of the quarter circles lacks but the portion between C and B to complete a diagonal rib, which would then be in the form of a pointed arch. The portion marked A, although a flat slab, forms with the ribs an arch, a peculiar type certainly, but nevertheless an arch. Then both the transverse ribs and wall ribs are arches, complete, and, what might be considered the test of an arch, capable of standing alone and supporting a load. I use the term "standing alone" with limitations, this simply excluding any support in a direction at right angles to the "turning" of the arch. Loading upon the arch to maintain its form does not in any way vitiate the arch principle.



If the arches (diagonals) pass out of sight behind such a slab as A, the portion visible from below is still part of the construction. The (to my mind) ugly wave line of the ridge joint, a broken back, has simply been got rid of—a trouble the early Gothic builders felt, and apparently only the English were capable of entirely eradicating, whilst maintaining a series of ribs of the same curvature.

The ribs are still part of the construction even if they do stop at the edge of the fan. They are only a parallel case to the steel ribs used in the support of a circular or multi-shaped well-light as employed largely in hotels and clubs, and such steel ribs are essentially constructive and not decorative.

The tenons in a door are still true construction, notwithstanding the fact that they may be hidden by a veneer of paint.

H. SLICER, M.S.A.

London, S.E.

[We gladly print the above two letters, as evidence that our article has attracted attention to the subject.

Mr. Purchon's statements we admit as correct as far as they go, and that there are a good many exceptions to our general statement as to French and English practice with regard to vaulting-shafts. Nevertheless we think it is true that the starting of the vaulting-shaft from a separate base on the cap of the main arcade is a characteristically French practice during a great portion of the Gothic period, and that the vaulting-shaft rising from the floor is a characteristically English practice, and is the better one. The very inferior method of springing the vaulting-shaft from a corbel above the main arcade certainly is used in some important English examples,

but it is not so frequent as to establish it as the English practice, which leans much more to the use of the vaulting-shaft rising from the floor.

Our other correspondent, Mr. Slicer, entirely mistakes the point of our remark as to the function of the ribs in fan vaulting, and is under a wrong impression as to the whole theory and structure of a fan vault. His argument as to the diagonal rib forming a complete diagonal arch would be quite true if the arch were carried right through at the same curve; but it is not. The fan vault is a series of inverted conoids abutting against each other and against a spandrel of keyed masonry in the centre, which may be slightly arched, but which in some instances is quite flat. The point of the matter is this: in the previous forms of vaulting the ribs were built first, and were the actual structure, the rest being mere filling between them; in the true fan vault the whole built-up conoid is the structure, and the ribs are merely a surface ornament upon it, and are quite unnecessary to the structure. If our correspondent wants a practical example of this he can see it in the vaulting of the hall between the Crystal Palace High Level station and the entrance to the Palace (under the roadway). Structurally, that vault is a brick fan vault without the ribs, and the mediæval stone fan vault was constructed on just the same principle, the ribs and panels being only a surface ornament. And he will see this clearly if he gets leave to go on the top of the Henry VII. chapel vault, where there is certainly a structural transverse arch cutting through the conoids and assisting in their support; but the conoids themselves are seen as constructions of masonry slabs, without a hint of rib construction. There is an illustration of this (probably taken from Willis's treatise on Gothic vaulting) on page 347 of Mr. Bond's "Gothic Architecture."—EDS.]

R.I.B.A. Licentiate ship.

To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—I notice in the Journal of March 22, p. 304, a letter signed "Hard Worker, A.R.I.B.A.," which expresses what, I should imagine, must be the view of the majority of the Associates at the action of the Council of the R.I.B.A. in creating a class known as Licentiates.

The R.I.B.A. can from its constitution only be regarded as an educational and examining body; and if the value of the test by examination is to be abolished, the holding of their degree will soon cease to be any evidence of ability.

The letters A.R.I.B.A. after an architect's name have till now always denoted that he has passed the premier examination in architecture extant in this country, and they therefore in some measure carried weight, but if the unexamined class of Licentiates are to be allowed to append L.R.I.B.A. in the same manner, as I notice many of them doing, the significance to the general public will soon vanish, for without question the Licentiates must to a very large extent consist not only of men who have neglected the examinations, but of those who cannot attain the necessary standard to pass them.

The "special" examination is all that is needed for men in practice who do not wish to pass the "preliminary" and "intermediate" examinations, and the Royal Institute of British Architects would be far better advised to bar all those who cannot attain this standard.

AN ASSOCIATE.

London, W.C.

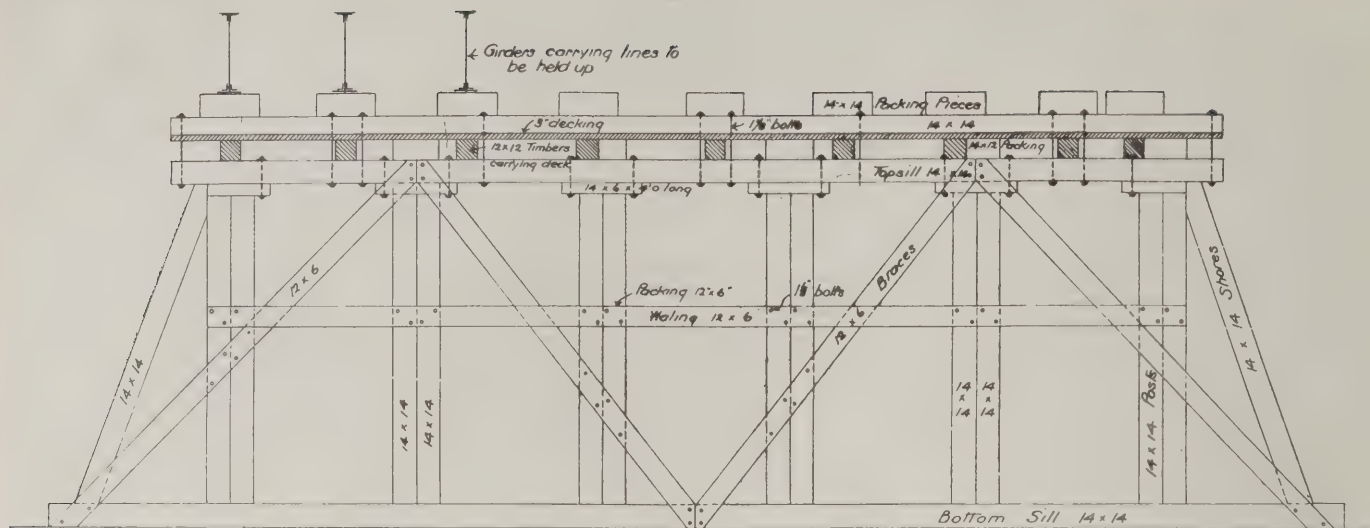
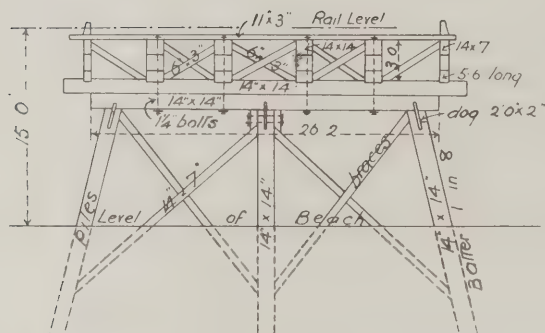
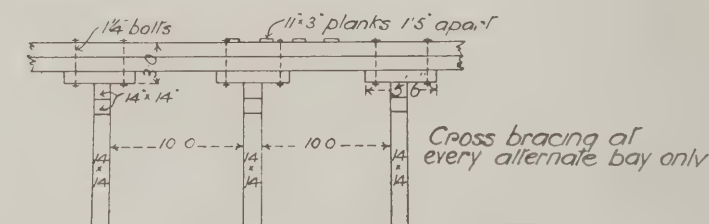


Fig. 4.



Longitudinal Section



Where B= breadth of section.
 „ D=depth.
 „ Y=distance between neutral axis
 of section and outermost
 fibres.
 „ f =safe stress in tons.
 Then :

$$\therefore \frac{W \times 10 \times 12''}{8} = \frac{12 \times [12 \times 12 \times 12]}{12}$$

$\therefore W \times 15 = 144$.
From which
 $W = \frac{144}{15} = 9.6$ tons distributed allowable load on each $12'' \times 12''$ timber.

In the case of the heavy viaduct carrying the railway and shown in Figs. 5 and 6, the calculation would be modified thus :

$$\therefore \frac{W \times 10 \times 12}{8} = \frac{12 \times (24^3)}{12} \times .5.$$

$$\therefore W_{15} = 576.$$

From which $W = \frac{576}{15}$ or 38.4 tons distributed load on each double timber each 10 ft. span.

As a matter of fact, the longitudinal beams above calculated are really continuous girders, and will bear considerably more loading than mentioned; but the process of working these out accurately being a very complicated one, and unnecessary in cases of this kind, the foregoing method is thought to be sufficiently approximate.

SOME PRACTICAL ASPECTS OF TOWN PLANNING.

In connection with a Town Planning Exhibition held in Edinburgh last week, several papers were read. At the afternoon session on March 27th, Mr. A. Lorne Campbell, F.R.I.B.A., said that the experimental stage of the movement was not yet passed, and the problems before the town planners of to-day were identical with those which the pioneers of Letchworth had to face—namely, the securing of land cheap enough to justify the venture and to erect houses for the working classes on sound principles. Economy must be accepted as the key-note of the whole. Speaking of the standard type of house for the better working-class man as erected in England, he had ascertained at what cost such houses could be erected locally, and that worked out at £750 for four houses, or £187 10s. per house. The cost per house would be reduced to £175 when 100 houses were erected.

Mr. W. G. C. Hanna, C.A., spoke of certain aspects of the financial problem of making the garden city scheme self-supporting, and keeping it on sound commercial lines. He pointed out that there were "lean" financial years to be kept in view, and the full yield could not be reaped for a long period.

Mr. J. F. Roxburgh, LL.B., W.S., said the conclusion he had come to was that taking advantage of the powers in the Act to restrict the number of houses per acre, housing on garden city lines was quite possible on ordinary commercial lines

down to rents of £18 or £20. With rents of from £14 to £18 it was possible by Co-operative Tenants' Associations helped by public loans at cheap rates. When they came to rents of less than £14 they must abandon the cottage type of house and go in for something in the nature of modified tenements.

Mr. F. H. Lightbody, F.S.I., detailed the price which might be paid for land with the cost of development and other cognate subjects.

In the evening the Exhibition was visited by members of the Old Edinburgh Club, and papers were read by Mr. W. A. Tait, C.E., and Mr. P. B. Glendinning, C.E., on "Some Proposed Thoroughfares."

LONDON'S WATER SUPPLY.

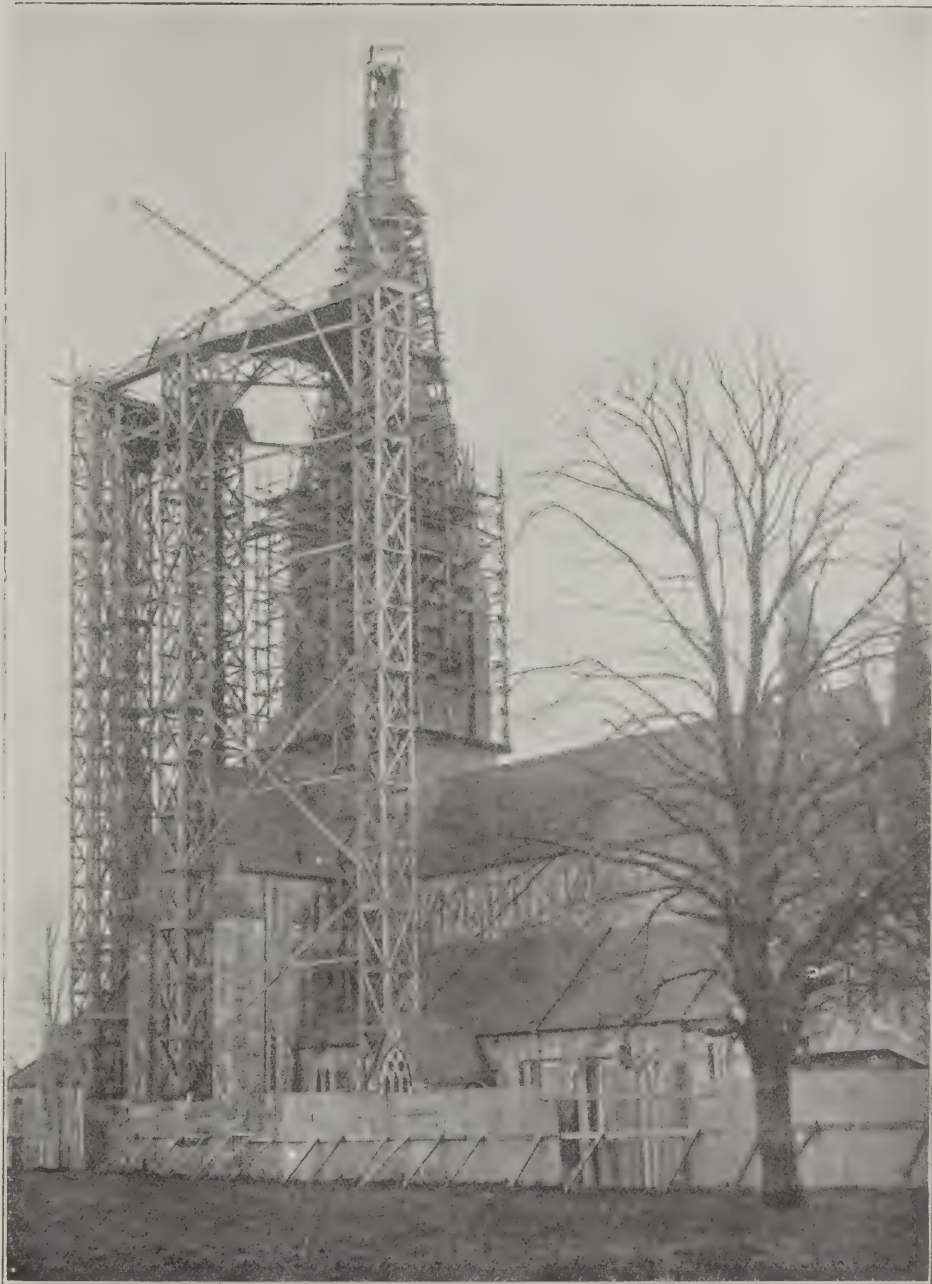
PROPOSED EXPENDITURE OF £8,000,000.

A Joint Committee of Lords and Commons, consisting of the Earl of Kintore (chairman), Lord Gough, Lord Seaton, Lord Marchamley, Mr. J. H. Dawes, Mr. Hastings Duncan, Mr. Holcombe Ingleby, and Mr. Stanier, met on March 29th to consider two important schemes relating to the water supply of London. By the New Works Bill of the Metropolitan Water Board it is proposed to construct at a cost of £6,900,000 storage reservoirs, pumping stations, aqueducts, pipe lines, and cuts for the abstraction of water from the River Thames, the various works being

situated in Datchet, Wraysbury, Staines, Horton, Stanwell, Haleham, Littleton, Shepperton, Sunbury, Wembley, Northolt, Greenford, and Perivale. The time required for the completion of the works is twenty-five years, and powers of borrowing money are asked, in addition, to close on £7,000,000 for carrying out the works under the Bill, to the extent of another million for the execution of other works under the general powers of the Board, whatever amount may be necessary for the purpose of defraying the cost of obtaining the Act, and, subject to the sanction of the Local Government Board, such further money as may be required. Under the second Bill, the object of which is to amend and consolidate the enactments relating to the abstraction of water from the Thames, the chief objects which the Conservancy Board, who are promoting it, have in view are to obtain from the Water Board the payment of an annual sum of £55,000, to be applied to the Upper Navigation Fund and to limit the daily average quantity of water taken from the river during any one year to 300,000,000 gallons. In addition to the opposition of local authorities and other public bodies, the proposal to erect a series of huge reservoirs with embankments forty feet high in close proximity to the river has aroused great hostility on the part of those who are afraid that the beauties of the Thames will be marred. The Committee is meeting daily in the Conference Room, Westminster Hall, from 11.30 a.m. to 4 p.m., except on Fridays, when the hours are 11 to 3.

TALL CRANE DERRICK AT KILLARNEY CATHEDRAL.

The tower and spire of Killarney Cathedral, now nearing completion, present at the present time a very remarkable spectacle, the scaffolding and the crane derrick conveying to the lay mind an extraordinary impression of daring and ingenuity, the derrick, at the same time, exciting professional curiosity as to the details of construction. For these details we are indebted to the clerk of the works, Mr. John Scannell. The tower itself, as will be seen from the accompanying photographic reproduction, is new, and has been designed by Messrs. Ashlin and Coleman, architects, Dublin, the contractors being Messrs. John Hearne and Son, Waterford. The cathedral is the tallest building in Ireland, being 290ft. high to



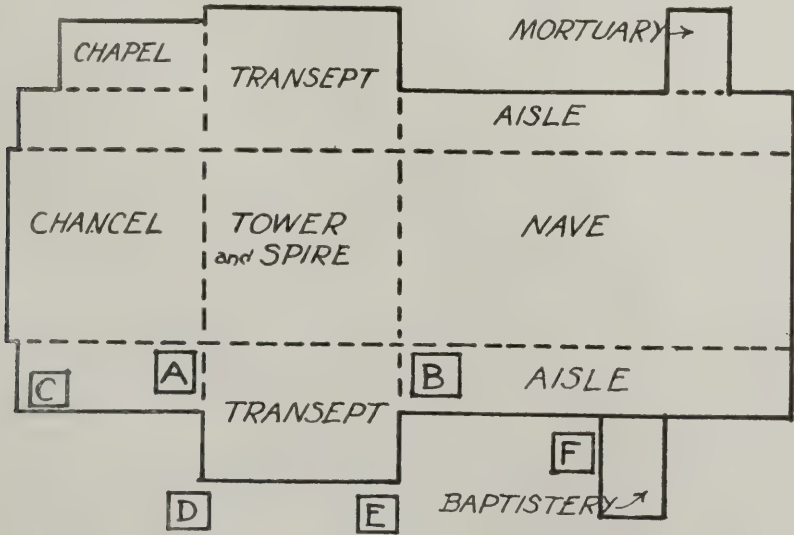
CRANE DERRICKS AT KILLARNEY CATHEDRAL.

Photo: L.N.A.

the top of the cross, and the crane derrick is said to be the highest ever erected in the United Kingdom.

The gantries comprise six stagings, each 180ft. high from the ground to the platform of the crane. They are in two groups of three, the centre leg of each group holding a derrick with 75ft. gib (on AB). The legs, well braced together by horizontal and diagonal beams, are all connected at the top by the bridge. The structure is formed of 12ft. by 9in. by 3in. deals, the main bracing pieces being of pitch-pine, 11ins. by 4ins., bolted together. The legs rest on concrete foundations, and are stayed with twenty-nine steel ropes to anchors sunk about 8ft. in the earth, at distances varying from 120ft. to 190ft. from the stagings.

The accompanying rough sketch plan, kindly supplied by Mr. John Scannell, shows the positions of the gantry legs. The main legs, 10ft. 6ins. by 10ft. 6ins., are indicated by A and B; the stay legs, C, D, E, and F, 8ft. by 8ft., square on plan. The anchor chains, which are not indicated, are taken in most cases from the stay of the second stage from the top, where all are connected. The legs A, B, and C are inside the building, and the others are outside.



PLAN SHOWING POSITIONS OF DERRICKS.



UNION TRUST COMPANY BUILDING, WASHINGTON WOOD, DONN, AND DEMING,
ARCHITECTS.

THE UNION TRUST BUILDING, WASHINGTON.

This building, the new home of the Union Trust Company, has been erected from the design of Messrs. Wood, Donn, and Deming. It is a typical example of modern classical architecture in America. In preparing the design it has been the aim of the architects to show, by substantial construction, simple lines, and freedom from unnecessary decoration, the character of the business carried on within. The original intention was to use marble for the building, but, on account of its greater cost over granite, a light shade of the latter stone was adopted.

The principal feature of each of the two fronts is a colonnade, made up of columns 5 ft. in diameter, extending up through five storeys, and carrying an entablature with frieze and decorated cornice, and an attic storey.

The ground-floor storey, in which are situated the banking offices of the company, and also a real estate office, is indicated on the exterior by the arches, with the square windows above expressing the clerestorey of the banking room, while the columns above express the office portion.

The banking room is 100 ft. by 50 ft. by 35 ft. high. The rooms here are of green marble, and give that colour note to the scheme of treatment, which is white and green. The ceiling is richly decorated with cofferings, and great bronze drops at the intersection of the beams suggest the means of supporting it from above. The plan of the room was suggested to the architects by the Basilica of Santa Maria Maggiore in Rome, while the general architectural treatment with the attic clerestorey is modelled somewhat after the large room in the Palace of Pietro Massimo in Rome. The remarkable feature of the room is that it is so light. Very few examples of lofty banking rooms, on top of which are placed tiers of utilitarian offices of a modern skyscraper, are to be found which

are not dark; they have to be lighted artificially. The contrary is the unique feature of this building. The floor space is divided in the middle by the public space, and is approached by the public at either end.

The safe deposit vaults and boxes are on the same level as the banking room, and are well lighted by skylights placed in a barrel vaulted ceiling. There is ample room for the clerical staff as well as for customers, and sufficient provision has been made for growth.

The entrance hall is carried out in white Norwegian marble, with the exception of panels which occur between the pilasters and above the high wainscoting. The marble pilasters support a Doric entablature, richly relieved in dull gold and colour. All the metalwork—lift enclosure, grilles, etc.—is of bronze, which also is the metal used for the lantern and wall brackets. A marble stairway leads to the first floor. In the storeys above are 175 office rooms, averaging 18 ft. by 16 ft., and all provided with direct outside windows—no room opening on to a court.

Admiralty Arch Gates.

The great wrought-iron and bronze gates which form part of the Victoria Memorial scheme, standing in the arches of the Admiralty extension, are now nearly completed. The centre gates are already hung, and sections of the two side gates are in position. These gates are said to be the largest of their kind in the British Isles. They were designed by Sir Aston Webb, R.A., and have been executed by Messrs. Strobe and Co. The centre gates are 34 ft. high and 20 ft. wide. The weight of iron used in the construction of the gates and grille is about 25 tons. The centre grille alone weighs about four tons. The Royal Arms and grille, and the wreaths on the gates, are executed in cast bronze, and weigh approximately two tons.

CORONATION DECORATION PROJECTS.

Westminster City Council Coronation Committee and its Sub-Committee have been inundated with suggestions and schemes, which, after careful consideration, have been reduced to half-a-dozen, the scheme suggested by Sir William Richmond and other artists being among those which survived the eliminating process. As a result of their deliberations the Committee recommend the Council to divide the streets to be treated into four different sections, and to accept the schemes prepared by Sir William Richmond and other artists, Messrs. James Pain and Co., Messrs. B. M. Boekbinder and Co. (Ltd.), of Kentish Town, and Messrs. Ryan and Son. Leaving out St. James's Street, which most probably, as on the Coronation of King Edward, would be decorated by the residents and occupiers of that thoroughfare—in fact a committee is already at work—the design of Sir William Richmond and his friends would be allotted to Piccadilly, Messrs. Pain and Co. would treat Pall Mall, Pall Mall East, Trafalgar Square, Duncannon Street to Charing Cross, Messrs. Boekbinder and Co. would deal with Parliament Street and Whitehall, while the decorations from Charing Cross to Temple Bar would be carried out by Messrs. Ryan and Son. Of course the whole matter is subject to confirmation by the City Council.

Each design bears distinguishing characteristics, though there are common requirements. For instance, the poles or masts are to be 30 ft. out of the ground and 60 ft. apart, and there is to be nothing in the shape of streamers across the streets. Dealing first with the artists, they undertake to provide masts according to this general specification. These masts are to be trimmed and planed and painted yellow, and surmounted with a crown in gold. On each there will be a garland of evergreens (weather-proof) about four yards long, falling from the top of the pole, and between each pair of poles are two swags of evergreens tied in the centre with a bow of gilt cord, containing two lights. The decorations from Pall Mall to Charing Cross will be distinctly Imperial in character. Representations of the flags of the Dominions and other parts of the Empire will adorn the masts, and there will be an effective commingling of shields and the Union Jack. Crowns and spear heads are included in the design, and garlands of flowers will hang from the swags of laurel.

Messrs. Boekbinder and Co.'s design for the decoration of Parliament Street and Whitehall, judging from their model, says a writer in the "Morning Post," presents many architectural features, which aim at being worthy of the thoroughfare and its magnificent buildings. Plain white columns 25 ft. high will be surmounted by bronze Corinthian caps on which rest gilded symbolical figures. About twenty feet from the ground a bronze caplet surrounds the shields of the Dominions and other parts of the British Empire. Laurel garlands connect the columns from each caplet. Coming eastwards, a feature of Messrs. Ryan and Son's design is that the laurel festoons will be of natural leaf. The masks will be alternating—one a flag and a medallion treatment and the other composed of an animal skin, to represent ermine—with red velvet draperies surrounding a medallion. At the base of the mask there will be a laurel spray with symbolical bannerettes depending at the junction of the festoons. The bases will be built out and panelled, and the posts will

be treated in a stencilled strap pattern design. The work on this section will be carried out under the supervision of Messrs. Castle and Warren, architects and surveyors.

Separate tenders had to be submitted for illuminations, consisting of sixteen candle-power lamps fixed at not more than two feet apart, outlining the principal features of the decorations, not less than 10,000 lamps per mile being used. The lamps have to be of various colours, matching the scheme of colour adopted for the daylight decoration, or they may be coloured with a non-flammable coloured shade or sheath to give the required colour effect. The whole of the work has to be executed to the entire satisfaction of the City Engineer, and it has to be completed by midnight on June 21, under a penalty of £20 per hour.

The Position of the Abbey Annexe.

A special meeting of the Westminster City Council was held to consider the report of the Works Committee on the subject of the annexe and covered ways at Westminster Abbey for the use of their Majesties and their guests at the Coronation. It was stated that a letter had been received with reference to the triangular piece of roadway in front of The Sanctuary, stating that the writers had learned from the Press that the Coronation Executive Committee proposed to erect a similar structure in front of those houses to the

one erected on the occasion of the last Coronation, which entirely obstructed the view of the Coronation Procession from every house in The Sanctuary. This structure, in view of the recent decision in "Campbell v. the Borough of Paddington," it was urged, constituted a grave infringement of the vested rights of the occupiers of these houses. The attention of the Coronation Executive Committee had been drawn to the decision in the case mentioned, in the hope that it might induce them to refrain from attempting to obstruct the view from the houses. Should application be made to the City Council by the Coronation Committee for leave to erect any such structure on the occasion of the forthcoming Coronation, the writers asked the Council to bear in mind that any such proposal would meet with the opposition of the residents in the houses in The Sanctuary.

They contended that any such structure could be easily erected within the Abbey grounds on the northern side, and that a covered way could be brought round from such structure to the western door of the Abbey, so that their Majesties and the members of Parliament could alight at the western door and enter the new structure by means of the covered way, returning by the same way for the purpose of entering the Abbey. By this means, while equal facilities would be afforded to their Majesties and suite, all the houses in The Sanctuary would be able to enjoy (as was their right) an unobstructed view of the

procession. The Westminster City Council decided, on the recommendation of the Committee, to offer no objection to the erection of a hall or annexe immediately to the west of Westminster Abbey, and of covered ways to the various approaches, and to convey their decision to his Majesty's Office of Works and the writers of the letter.

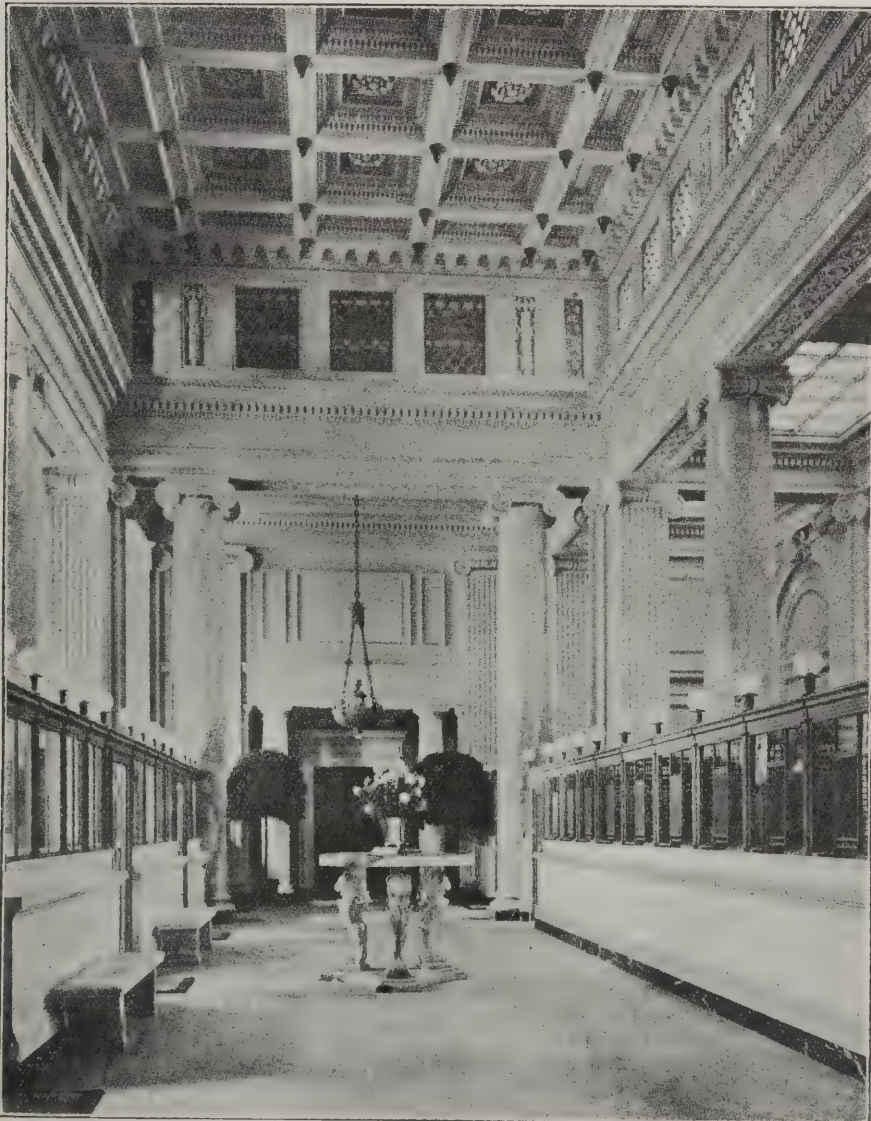
PROFESSOR LETHABY ON "THE CORONATION CHURCH."

"Westminster Abbey as the Coronation Church" was the subject of an address given by Professor W. R. Lethaby at the annual meeting of the London Topographical Society, held in the rooms of the Society of Antiquaries, Burlington House. Westminster, said Professor Lethaby, who is Surveyor of the Fabric of the Abbey, had always been a royalty in charge of the King. The Abbey was founded on the riverside, close to the great Roman road which crossed the Thames by a ferry and continued northwards to the Edgware Road. The foundation of a Royal Abbey in the suburbs of London was the first link in the long association between Westminster and the Government of the country. The tradition of the Confessor's palace was still handed on in the name of the Old Palace Yard. In the hall of the Palace the first act of the Coronation was accomplished, the raising of the King-elect on to the King's bench.

Edward the Confessor consecrated the Abbey which he had built a few days before his burial in January, 1066, and on Christmas Day of that year William the Norman was crowned King of England at the Confessor's tomb. Recent research had shown the sort of church the Confessor built, a church of Norman character, and probably constructed by a Norman master mason. It was intended to be the scene of kingly sepulture and of future coronations. St. Edward gave his regalia into the keeping of the Abbey authorities as a sign of his intention that the Abbey was to be the coronation church, and it was the custom to lend the crown, sceptres, vestments, and other property for the day on the occasion of a coronation, and to insist on their being returned early. Professor Lethaby gave a detailed account of the Byzantine influence which had gradually crept into the coronation ceremony.

Another loan from the Byzantine was the stage, constructed on piles, and having a canopy above and standing out in the centre of the church. At Westminster the stage was raised on pillars so high that a man-at-arms could ride under it. In his passion for building, Henry III., who rebuilt the Confessor's Abbey, was stronger than any other English King, and carried out to the full the idea that it should be the sepulchral church of the Royal line and the Church of the Coronation. At the unobstructed middle point of the church a stage was set up for the crowning of the King, the triforium was served by large staircases, and every effort was made to pack the building with as many people as possible. At the Coronation of Edward II. the pressure was so great that a knight was crushed to death in the church.

The high pulpitum, a name which the stage first bore at the Coronation of Queen Eleanor in 1236, enabled the King to be seen, but when a lower stage was used enormous ascending scaffoldings had to be erected. Professor Lethaby also described the glory of the Abbey in those early days, with its columns of polished marble, its stonework covered with paint-



UNION TRUST COMPANY BUILDING, WASHINGTON: INTERIOR OF BANKING ROOM.

ing and gilding, the blazing splendour of its golden shrine, and its beautiful tapestry. Every part of the pavement was covered with cloth of gold, and the church was illuminated by innumerable candles.

SOCIETIES' MEETINGS.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

On March 22nd, Mr. W. E. Barry, A.R.I.B.A., of Hull, read a paper on "Garden Suburbs," before the York and Yorkshire Architectural Society.

He first reviewed the possible effect of the Town Planning Act in the suburbs of our large cities, and drew a contrast between what was being done on the Continent of late years, and what was being done here. Describing the general principles to be borne in mind when any garden suburb scheme is formulated, he said the natural beauties of the site, the trees, hills, and hollows should be preserved and not ruthlessly destroyed, as they are in nine cases out of ten; as many roads as possible should run east and west, in order to secure to each house its share of sunshine.

Avoid long, straight streets, guard against overcrowding the houses and cottages on the land; abundant open spaces to be reserved for fresh air and recreation, and generally endeavour to bring the quiet life of the country, the trees, and the colour and scent of the flowers within reach of the dweller in town.

Mr. Barry went on to describe a few of the new suburbs now being formed, such as Letchworth, Hampstead, Earswick, and went fully into the detail and planning of the garden suburb at Hull, which has been laid out by himself and his partner, Mr. Runtun.

The paper was illustrated by numerous lantern slides, and plans of the different suburbs mentioned by Mr. Barry were arranged in the Hall for inspection.

Mr. C. H. Channon, F.R.I.B.A., proposed a vote of thanks, which was seconded by Councillor Dr. Sanderson Long, and supported by Messrs. Burleigh, Scaife, and Dyer.

The next meeting will be on April 19th, when a paper will be read by Mr. Harold E. Henderson on "The Domestic Architecture of the Yorkshire Dales."

NORTHERN ARCHITECTURAL ASSOCIATION.

The annual meeting of the Northern Architectural Association was held at Higham Place, Newcastle, the President (Mr. H. C. Charleswood) occupying the chair.

Mr. Charles S. Errington (hon. secretary) presented the annual report of the council for the 57th session, which showed that there were 92 members, 95 associates, and 46 students, a total of 233, as against 237 in the previous year. The council had carefully considered the representations made to them by local lead manufacturers with a view to local architects specifying sheet lead, lead pipes, and white lead, manufactured in the North country, and it was felt that the proposal had much to commend it. The attention of the council having been drawn to the fact that the Ecclesiastical Commissioners publish a stereotyped set of plans, specifications, and quantities for parsonage houses, which the council considered detrimental to architectural practice, urgent representations were made to the Royal Institution on the matter, and the Ecclesi-

astical Commissioners had been urged to discontinue this procedure.

The financial statement showed that the ordinary income amounted to £164 11s. 7d. and, after all expenses had been met, there was a balance in hand of £29 7s. 9d., as against £9 18s. 1d. the previous year.

Mr. Marshall moved that a committee be formed to revise the rules and report the draft of the amendments to the Association. He also thought the services of some professor should be obtained to assist the students in their work.

The resolution to appoint a committee was agreed to.

The meeting re-elected Mr. Charles Wood president, Mr. W. Milburn vice-president, and Mr. C. S. Errington hon. secretary, Mr. R. Burns Dick hon. treasurer, and Mr. J. Bruce hon. librarian.

DEVON AND EXETER ARCHITECTURAL SOCIETY.

The Journal of Proceedings, 1910-11, of the Devon and Exeter Architectural Society has for frontispiece an admirable half-tone portrait of the President, Mr. James Jerman, F.R.I.B.A., and contains also a view of the Barnstaple steeple, which was restored under the supervision of Mr. Southcombe, of Barnstaple, who read a paper on the subject before this society.

The roll of membership stood, in the last annual report, which is of course printed in the Journal of Proceedings, at 79—namely, 49 members, 13 associate members, and 17 associates. A regular scale of charges for quantities has been adopted by the Society.

CROYDON POLYTECHNIC.

On March 18th, by permission of Sir Henry Tanner, F.R.I.B.A., and the builders, Messrs. Spencer Santo and Co., Ltd., the students of the Building Department of the Croydon Polytechnic, accompanied by Mr. John Crewdson, their lecturer in building construction, visited the extension to the Royal Courts of Justice in the Strand, London. The large party was conducted over the building by Mr. Barber (the clerk of works) and the general foreman. More than 85,000 cubic feet of Portland stone is to be used. Much of the stone work in the windows and entrances is elaborate in detail, and the groined vaulting in the main corridors is richly moulded. Reinforced construction has been adopted for floors, beams, columns, stairs, and roofs. The glazed brickwork in the corridors is an excellent example of workmanship. The students were much interested in looking over the large number of drawings, which the clerk of works was good enough to exhibit.



UNION TRUST COMPANY BUILDING, WASHINGTON: DETAIL OF ENTRANCE.

NEWS ITEMS.

New Police Headquarters for the West Riding.

At a meeting of the West Riding Standing Joint Committee, plans were submitted for the erection, at Wakefield, of new police headquarters, at a cost of £32,000.

* * *

Memorial to a Bridge-builder.

A stained-glass window has been unveiled in St. Matthew's parish church, Coedpenmaen, Pontypridd, in memory of William Edwards, designer and builder of the town's famous old bridge.

* * *

Changes of Address.

Mr. John E. Burton, architect and surveyor, Norwich, has removed to Victoria Chambers, Bank Plain, Norwich.

Messrs. Brims and Co., contractors, 5, St. Nicholas Buildings, Newcastle-upon-Tyne, announce that they have decided to remove to more commodious premises close to Manors East Station. Their address for all correspondence, etc., is now Pandon Buildings, Newcastle-on-Tyne. They have also transferred their riverside plant and store yards to a larger site in South Shore Road, Gateshead.

* * *

Shaftesbury Avenue Improvement.

Westminster City Council has been recommended by the Improvements Committee to consent to the closing of Arundell Street and Arundell Square, Shaftesbury Avenue, in consideration of the payment to the Council of the sum of £12,500 as a contribution towards the cost of street improvements in the City. The street and square form a *cul de sac*, and it is proposed to erect a block of new buildings on the site.

* * *

Garden City for Dockers.

The proposal to provide housing accommodation for the large population which will inevitably be attracted to the district around the Royal Albert and Tilbury docks when the Port of London completes its great dock extension scheme is being earnestly considered by the Garden City Association. They are anxious to secure proper and healthy conditions for the dockers and their families, and the local authorities concerned—the East and West Ham Borough Councils, whose co-operation is essential—are to be approached. It is understood that there is a considerable area of land available for the purpose in East Ham and West Ham—at least 600 acres, and the Garden City Association have decided to survey the district and prepare a plan.

* * *

Setting Out Face-Moulds and Bevels.

Mr. John Creadson, 42, Penshurst Road, Croydon, who is a metallist of the Carpenters' Company and of the City and Guilds of London Institute, and is the head of the Building Department of the Croydon Polytechnic, has issued a cheap pamphlet (6d.) in which are concisely set forth the methods of obtaining face moulds and bevels for wreaths in handrailing. Four full-page plates (12 ins. by 9½ ins.) illustrate various typical cases, the accompanying text explaining the successive steps in working out the geometrical problems that are involved. The author states that his experience in teaching has led him to conclude that students more readily understand the geometry of solids than of

lines and planes, and for this reason a prism has been used in each example, the plans of the adjacent faces of the prism being the tangent lines to the centre line of rail. The pamphlet is an admirably simple introduction to a subject that is too easily and too often obscured by explanation.

* * *

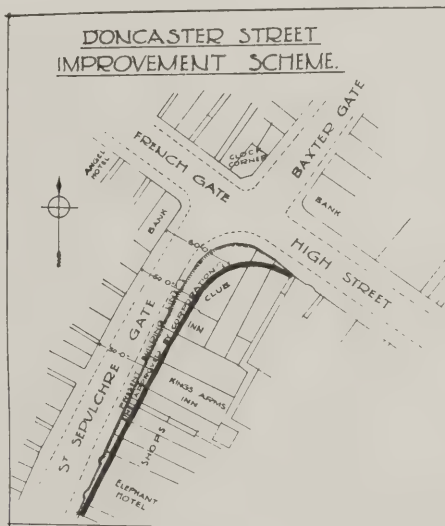
St. Andrew's, Aberdeen.

Extensive alterations on the structure of the historic St. Andrew's Episcopal Church, Aberdeen, are contemplated, and a scheme of reconstruction prepared by Mr. R. S. Lorimer, A.R.S.A., Edinburgh, has been adopted by the trustees. This includes the removal of the present galleries and vestibule, and the erection of a new porch from the present west door to the street. As a memorial to the late Dean Danson, for many years rector of the church, a chancel screen of oak will be erected. The entire scheme is estimated to cost about £2,000.

* * *

A Doncaster Street Improvement Scheme.

The Doncaster Corporation have adopted a plan (shown herewith) for the widening of the north end of St. Sepulchre Gate, one of Doncaster's busiest thoroughfares. This street being at present only about 38ft. wide, it is intended to



increase the width to 50ft. The alterations will be carried out on the east side of the street, commencing with the Elephant Hotel and finishing at the corner of High Street. By the demolition of the buildings involved, the town will incur no loss architecturally, while, on the other hand, it is obvious that the scheme offers excellent architectural opportunities, of which it is to be hoped that the fullest advantage will be taken.

* * *

The Quadriga for Constitution Hill Arch.

It is not expected that the quadriga, the gift of Lord Michelham, will be fixed in position on the triumphal arch at the top of Constitution Hill and all the work in connexion with it completed, for another six months; but the casting in bronze at Thames Ditton is practically finished. This group, which will be the largest of its kind in London, has occupied Captain Adrian Jones, the sculptor, more than three years. The maximum height is 34 ft., the wheels of the chariot have a diameter of 8 ft., and the weight of the whole group in bronze is about 36 tons. King Edward took great interest in the work while the modelling was in progress.

R. I. B. A.

At the business meeting of the R.I.B.A. on March 27, the following candidates for membership were elected:—

AS FELLOWS (3).

LUCAS, Thomas Geoffry.
MITCHELL-WITHERS, John Brightmore (Sheffield).

WATKINS, William Henry (Bristol).

AS ASSOCIATES (53).

ADAM, Alexander (S. 1907) (Glasgow).
BARNISH, Leonard (S. 1903) (Liverpool).
BECKETT, Richard Thomas (Qualified 1890) (Chester).

BESWICK, William (S. 1908) (Chester).
BIRKETT, Stanley (S. 1905) (Manchester).
BUNCE, Henry Edgar (S. 1908).

BUTT, Charles Frederick (S. 1908).
CARTER, George R. (S. 1908) (Leicester).
CHAUNDLER, James Hubert (S. 1905).

CLOUX, Frank Louis Whitmarsh (S. 1906).
COATES, William Victor (S. 1908) (Grimsby).

COCKRILL, Kenneth Arthur (S. 1908) (Gorleston).

COOMBS, Leslie Douglas (Special Examination) (Dunedin, N.Z.).

CRAUFORD, William Harold (S. 1907).

DAVIS, Philip Wolf (S. 1907).

DRYSDALE, George (Special Examination).

EVANS, Thomas Glynne (S. 1908) (Liverpool).

GLANFIELD, Ernest Budge (Special Examination).

HALL, Edwin Stanley, M.A. Oxon (S. 1907).

HATHAWAY, Percy William (Special Examination) (Rochdale).

HETT, Leonard Keir (S. 1909).

HIGGINS, William Thomas (S. 1906) (Stony Stratford).

HODGES, Claude Vivian (S. 1905) (West Bromwich).

HUGHES, Thomas H. (S. 1909) (Aberdeen).
HULBERT, Francis Seymour, B.A. (Cantab.) (S. 1909).

JONES, Cyril Montagu (S. 1906).

KIPPS, Percy Kingsford (S. 1906).

LODGE, Thomas Arthur, Jun. (S. 1909).

LYON, Maurice, B.A. (S. 1907).

MANSFIELD, Leslie (S. 1908).

MARTIN, John Gray (S. 1906) (Oldham).

MATHESON, Kenneth William (S. 1904).

MATTHEWS, Bernard Frank (S. 1909) (Southsea, Hants).

MOORE, Ernest Josiah Edwards (S. 1906) (Cardiff).

MUNT, Francis Edwin Spencer (S. 1906).

PEASCOD, Joseph (Special Examination).

PYWELL, William Jackson (S. 1907) (Brighton).

ROBERTSON, Norris Bathgate (S. 1908) (Leicester).

SCHOFFIELD, John Frank (S. 1905).

SHANKS, Norman Fraser (S. 1907) (Manchester).

SLATER, John Alan, M.A., Cantab (S. 1908).

SMITH, Frank William (S. 1908) (Newark-on-Trent).

SUTTON, Cecil Alfred Leonard (S. 1909) (Nottingham).

TANNER, Edwin John (S. 1909).

THOMPSON, Charles William Ward (Special Examination) (Chatham).

TUGWELL, Sydney (Special Examination) (Bournemouth).

WALKER, Marshall Eyre (S. 1907).

WELCH, Herbert Arthur (S. 1907).

WELLBURN, George Taylor (Special Examination) (Redcar, Yorks).

WHEATLEY, Joseph Horace Lyneham (S. 1906) (Petersfield).

WILSON, Herbert John (S. 1905) (Peterborough).

WINCH, Arthur (S. 1909) (Leeds).

WRIGHT, Edward L. (S. 1906) (Cardiff).

TIMBER : ITS GROWTH,
DISEASES & PRINCIPAL USES.

BY JAMES S. HOLLIDAY.

In his lecture on "Timber: its Growth, Diseases, Seasoning, and the Principal Uses of its most Important Kinds," delivered to the Institute of Builders, Mr. Holliday gave a very interesting résumé of useful facts. A portion of the lecture appeared in the "Journal" of March 22.

One of the necessary conditions to good timber is that the annual layers, or rings, shall be evenly grown and of the right average breadth. Another is that the central parts shall be sound; in old trees these central parts are apt to decay.

The stem of a timber tree consists of the inner and perfected layers, termed "heartwood" or "duramen"; the outer, younger, and imperfect layers, known as "sapwood" or "alburnum"; and the exterior of the whole stem, commonly known as the "bark."

The centre part of all of the stem—the pith—is composed of a cellular tissue, the cells being numerous and of varying size. This pith, which in a young tree is full of fluid, does not, as might be supposed, increase in bulk as the tree matures, but appears rather to diminish, by reason of the fluid drying out, but it retains its place, however, in the oldest trees.

There exist in the transverse section of the stem of a timber tree radiating lines from the centre of the bark called the "medullary rays," and known to the carpenter as the "silver grain." These lines are usually very fine, but in some cases, as, for instance, in those of the oak and the beech, they are of two kinds—the one broad and the other quite narrow. Much warping of timber (especially when it is unseasoned) could be avoided, if, in its conversion, some regard were paid to the arrangement of these rays. The timber should be cut as far as possible in their direction, as the shrinkage in seasoning is for the most part angular to them.

By the construction of these medullary rays, in connection with the annual rings, a means is afforded for the ascent of the water containing mineral salts and gases obtained from the soil by means of the roots. This water or sap rises each spring, and continues to flow through the tubes until it reaches the leaves (which have been termed the laboratory of the plant), where it is distributed to the leaf-cells, and gives up its minerals. These leaf-cells, thus supplied with salts, etc., manufacture, when exposed to the sunlight, organic compounds (which by chemical change become wood substance). These compounds are carried from the leaves back into the stem, and pass by the inner tissues and the medullary rays to the growing part of the tree. The "cambium," a delicate layer of active cells on the outside of the sapwood, being supplied with food materials, adds new layers of wood to that already formed, and the stem is enlarged periodically.

The woody layers when first formed are full of sap, but change and gradually become solidified by the drying of the wood cell walls of each subsequent layer.

The perfecting of the layers is very gradual, and the time necessary to convert sapwood into heartwood varies considerably in different trees, but the oak forms its wood most rapidly under ordinary conditions, and the reverse usually in the case of pines and firs.

A tree does not cease growing at maturity; but although it increases in bulk, the later layers are generally of

inferior quality. Therefore, for good healthy timber, trees should be selected with an abundance of young shoots, and the topmost branches strong and vigorous.

When we observe the cut ends of fallen trees, it occurs to few that the innermost tiny ring enclosing the pith is the section of the stick that was once the seedling tree.

Timber trees when felled contain a great amount of moisture, and, therefore, require well seasoning before being used, especially for joiners' work. This is accomplished by various methods, natural and artificial. [Mr. Holliday's description of a method employed by his firm was given in the "Journal" of March 22.]

Damage may be caused to timber-growing trees in various ways, such as by the breaking off of branches, or by a blow from an adjacent tree as it is felled, or, perhaps, by the scorching of a ground fire. And if the layers at the parts affected are not organically united, the alburnum and duramen are contused; the wounded part no longer resists, but absorbs the moisture, which tends to decompose, and rot soon supervenes to the detriment of the tree.

Defects may also have been caused to the tree by the many perils to which it was exposed while in its native forest in the growing period, or while it lay felled on the ground, on the timber slide, or when rolling into the river to be floated to its destination.

Diseases.

Most timber is subject to certain defects, such as rind gall, fissures, etc., and in proportion to the scarcity or abundance of these defects may be said to depend to a large extent whether the timber will be good or bad.

Of fissures, three may be mentioned, viz., the "heart-shake," the "star-shake," and the "cup-shake," which are more commonly met with. Heart-shakes run in the direction of the medullary rays, the wider part being next to the pith, and if they occur to any extent, the conversion of the timber into planks is seriously interfered with. The author believes that the principal cause of the heart-shake is the unequal loss of water and the consequent shrinkage of the older part of the wood.

The star-shake is another form of radial fissure, which, however, unlike the heart-shake, widens towards the bark. It is thought that the star-shake is due to the more rapid drying of the outer layers of wood as the tree lies exposed after felling.

The cup-shake, unlike either the heart- or star-shake, occurs in the plane of the annual rings, and more or less entirely separates the layers. This kind of shake may be due either to sudden changes of temperature, the excessive bending of the tree, or to other and unknown causes.

In the case of the oak, cup-shake may be caused in consequence of the young leaves of the tree being destroyed in the early part of the summer by caterpillars and moths.

Timber may be broadly classed under two heads—(1) Hard wood (non-resinous, and non-coniferous) which includes all leaf bearing trees such as oak, elm, mahogany, walnut, etc. (2) Soft wood (resinous and coniferous) which includes all the pines and firs.

Hard Woods.

These are many in number and form a very interesting study, but I shall content myself with referring to three of them only, all of which are now extensively used in the building trade.

Naturally the first is oak. Oak is found in great variety in Europe, Asia, and

North America. Very fine specimens are to be found in the Forest of Dean in Gloucestershire, where, on a rocky sub-soil, the trees generally attain to noble dimensions, but with the drawbacks, however, of cup and star shakes, which may be attributable either to a peculiarity of the species or to the rocky nature of the soil.

The properties of the English oak have been accepted as being good for all kinds of architectural work by all practical men.

Oak trees grown in sheltered situation or in forests frequently reach a height of from seventy to one hundred feet. The wood is hard, tough, and strong, and its solidity of character is such that it resists the action of water. If not properly seasoned, it is liable to excessive warping and shrinkage, but when once the moisture is completely evaporated, few woods are liable to so little change, and it stands atmospheric variations better than any other wood, and even when wholly submerged in water, its powers of endurance have scarcely any limit. In consequence, however, of the pyrogallic acid which it contains, trouble may arise when it is fixed in contact with iron fittings.

Riga oak, which takes its name from the port of shipment, is obtained from a tree found in the interior of Russia, whence it is brought by river to Riga. It is characteristic of this oak that the medullary rays are very numerous and distinctly marked, and its fineness of grain and figured appearance when cut recommend it for good joiners' work or veneers for cabinet purposes.

Among other European oaks largely used is that grown in Austria and Hungary.

Passing from Europe to America we find three or four valuable kinds of oak employed in this country. There are three hundred different species of American oak known to botanists, about forty to fifty of which are found in the United States. These are divided into two groups termed "White Oaks" and "Black Oaks," the former yielding valuable timber, but the timber of the latter being soft and porous and unfit for constructional purposes.

White oak, which flourishes in almost every variety of soil, derives its name from the pale colour of its bark. It opens very sound, and shrinks but little during the process of seasoning, and it is therefore very suitable for carriage building and joiners' work. Some authorities go so far as to say that it is much the best foreign oak for construction. Experiments that have been made show that white oak compares favourably with all foreign oaks, but is slightly inferior in strength to that of English oak.

Canadian red oak is another oak imported into London annually, but in larger quantities into Liverpool, principally for cabinet making, but it is not considered good for architectural or engineering work requiring strength and durability.

Wainscot Oak.

The term "Wainscot" has reference solely to the form of its conversion, and can be supplied to any oak, whatever its origin, which is cut with a view to exhibiting its figure.

The wainscot oak of commerce is mainly imported from Austria-Hungary and Russia, but similarly figured oak is also imported from America, and is commonly known as "Quartered," descriptive of the method of sawing. The European wainscot is prepared by removing a plank from the centre of the log, and sawing the remainder more or less at right angles to

the line of the original cut, into boards or planks as required.

Teak.

Of the vast timber supplies of the East none are so important to us as those of the Indian Empire, and of these, teak stands pre-eminent. It is found principally in Central and Southern Indian and Burmah, but it is also plentiful in Siam, and found to some extent in several islands in the Indian seas.

A remarkable feature of the teak tree is the size of its drooping leaves, which are from ten to twenty inches in length and eight to fifteen inches in width. The tree frequently attains a height of from eighty to one hundred feet, and yields timber from twenty to fifty feet in length, and ten to thirty inches in width. It is hard and strong, is fairly straight in grain, and its average weight per cubic foot is 40lbs. It contains a resinous oily body, which clogs its pores and resists the action of water. This oily substance congeals, and seriously affects the tools working it, but has the advantage of acting as a preservative against rust when iron is in contact with it, for which reason it is preferred before all other known woods for the backing of armour plates of iron-clads.

Its durability is remarkable, and even the attacks of white ants seem to be resisted by it. It possesses, indeed, so many valuable properties, that it has long been held in favour as a material for construction. For some years past it has been largely used by railway companies for staircases, and is now adopted by the L.C.C. for fireproof doors and stairs. It is also very widely used for joinery purposes. Practically the whole of the joiners' work in the Victoria and Albert Museum is made of teak, the deeply moulded and carved ceiling in the vestibule is also made of this material, the panels being inlaid with holly wood.

There is a practice of girdling the teak tree in Burmah three years before it is felled, by cutting a ring through the bark and sap in order to kill the tree. This object is attained in a few days or weeks, the natural juices being prevented from rising through the sapwood. The great heat of the climate seasons the wood and makes it lighter for floating down the rivers to the place of shipment. This practice of girdling and seasoning the trees, however, is considered by some to be prejudicial to the quality of the timber, their suggestion being that it results in the tree drying too rapidly and becoming brittle.

A large amount of teak is now imported from Siam and Java.

Mahogany.

Among the rich variety of timber trees met with in Central and South America and the West Indies, a large number never reach our markets. Spanish mahogany is found in Central America, Mexico, and the Island of Cuba, and may be said to include the finest of all the West Indian mahoganies, having regard to beauty of colour and richness of figure. It is not subject to heart or cup shakes to any extent.

Honduras mahogany, formerly found in abundance in the forests of Central America, and first imported into England about 1725, is not now so plentiful. It is well known to commerce as a valuable wood for furniture and joinery purposes. Its quality varies very much according to the situation in which it is grown, but the best of it comes from Northern districts. Honduras and other descriptions of ma-

hogany have only about 1in. of sapwood, and being free from most defects, the loss in conversion is trifling.

African mahogany has for some years been imported into the London markets. It is hard, with a wavy and figured appearance, takes a high polish, and like Spanish mahogany, possesses great beauty.

Soft Wood: Dantzic, Memel, Riga, and Swedish Fir.

These qualities of timber, mentioned in most architects' specifications, are all yielded by pines, and are not botanically different species, but merely timber of the same tree grown in or shipped from different places.

Broadly speaking, all the red and yellow timber coming from the Baltic ports goes under the name of "Fir," though in reality it is the wood of the pine. White fir is spruce, commonly known as "white deal."

Dantzic wood takes its name from the port of shipment, the forests from which it is drawn in Prussia and Prussian Poland, and on the borders of Russia, where it is formed into large rafts and floated to Dantzic, advantage being taken of this mode of transit for bringing large quantities of corn from the interior for shipment to foreign markets.

Riga Fir.

This also takes its name from the place of shipment, although it is largely drawn from many of the forests in the interior of Russia. The tree is of almost perfectly straight growth, and very free from knots, with a clear fine straight grain.

Swedish Fir.

This, as its name indicates, is a native of Sweden, where it was very abundant in earlier times, but the great demand for this class of timber in recent years has outgrown the rate of production, and, consequently, the original stock has become seriously depleted. It is soft and straight in grain, liable to heart and star shakes, slow in growth, and makes its wood at about half the rate of Dantzic and Riga fir.

Norwegian Spruce or White Fir.

This is very abundant on the mountain slopes of Norway, and seems to flourish most in a damp climate. It is also found on the mountain slopes of North America. Spruce fir is an evergreen, and assumes a beautiful form with its lower branches drooping nearly to the ground. The wood is white in colour, tough, light, and elastic, but when cut, it is inclined to warp.

American Pines.

There are about thirty or more species of pines in Canada and the United States, the best known being the red pine of Canada. This timber, unlike Riga and Dantzic firs (which take their title from the port of shipment), derives its name from the reddish colour of its bark. The timber is white, tinged with yellow or straw colour, and possesses a clean fine grain, which works up to a silky face. These qualities and the fact that it rarely shrinks render it a choice and valuable wood.

Yellow Pine.

This tree is found in North America, growing in every variety of soil, but flourishing best in deep moist loamy sand. It is often called "Weymouth" pine in compliment to Lord Weymouth, who first introduced it into this country, but in America it is known as white pine. It grows to a height of from one hundred to one hundred and fifty feet, and from nine to twelve feet in circumference, has a clean fine grain, works up with a smooth

silky surface, but has the disadvantage of being subject to cup and heart shakes. This, however, is not a serious disadvantage, having regard to the large size of the tree. Of late years it has become very scarce in this country, the market price rendering it almost prohibitive except for works where the cost was no object.

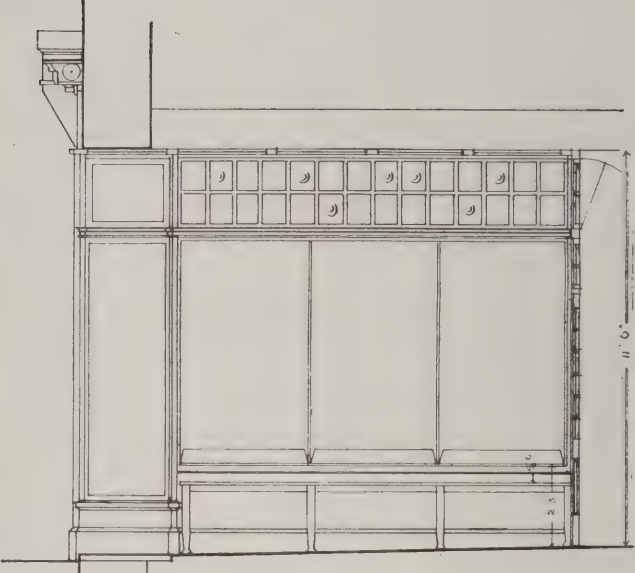
Contractors generally have experienced great difficulty in obtaining yellow pine, so extensively used in former times for panels and for the best joiners' work. This is mainly attributable to the fact that the greater portion of the supply of this timber is consumed in America, hence the necessity of substituting other woods, such as cypress, which is being used largely for panels, as it can be obtained in long lengths and wide widths. Another successful substitute for yellow pine is New Zealand white pine. It is very clean, sound, and mellow, and can be worked up to a smooth surface, and, like cypress, costs considerably less than yellow pine.

SIR EDWARD POYNTER AND THE ST. JAMES'S PARK SCHEME.

Sir Edward Poynter, President of the Royal Academy, in a letter to the Lord Mayor on the subject of the proposed Memorial in the Mall (which is dealt with in an editorial note in the present issue), says: "From the tone of some of the letters which have appeared in the papers one might infer that the construction of the road and bridge was a new proposal, but it is many years since the foot traffic between the north and south sides of St. James's Park became so considerable that it was necessary to provide a bridge across the ornamental water (in place of the ferry which I well remember as a new institution when I was a boy), combined with a new broad path leading to the bridge from the Mall on the one side of Birdcage Walk, on the other for the accommodation of the continually increasing stream of pedestrians who use the Park as a short cut in pursuit of their daily avocations. It was perhaps unfortunate that such an invasion on the rural privacy of the Park had to be made. The road could never be anything but a highway, and as the traffic increased and it was found necessary to treat it with asphalt, it became, and is, an unsightly feature, incongruous with its surroundings."

"As for the bridge, it would be difficult to find anything more tasteless or more smacking of the cheap and nasty. For some 50 years (more or less, the exact date of their construction I do not remember) Digby Wyatt's cast-iron piers with their common and inappropriate ornament have stood as an eyesore—only unnoticed now because they have become familiar objects to the public. I was, therefore, fully in agreement with my colleagues of the Advisory Committee when it was suggested that it would be a fitting addition to the Memorial of our late King to replace the suspension bridge by a low stone-arched bridge, while the broad footway leading to it from the memorial monument would advantageously replace the present asphalted road. To those who object that this road would encroach on the spaces of grass which are so important and exceptional a feature of our London parks, I would say that it would only change its position and cover no more ground than the present road."

"I have seen many stone bridges in parks and gardens which, so far from disturbing their charm, add a most pleasing feature to the landscape. I do not know that Inigo Jones's bridge in the gardens at Wilton



SECTION

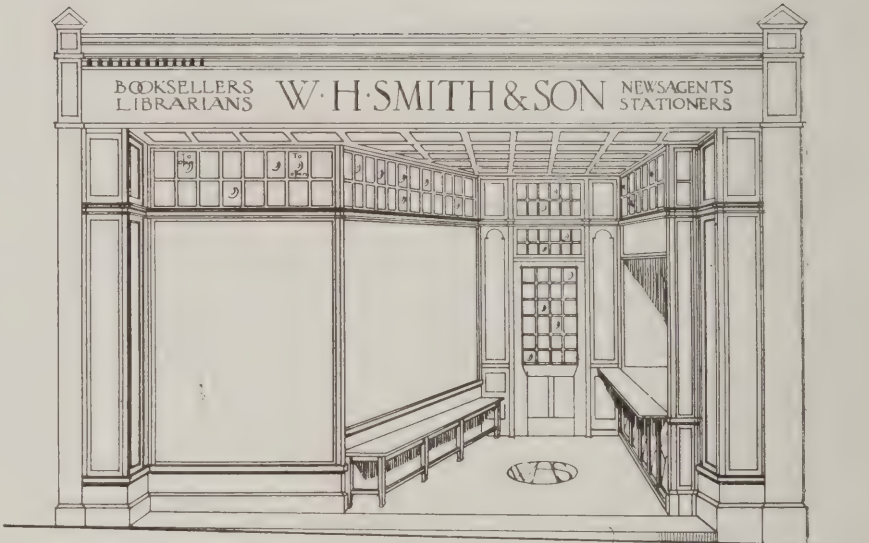
has ever been considered (*pace* Lord Carlisle) an act of vandalism, although it forms a much more conspicuous feature in the grounds than the very modest bridge which it is proposed to place in St. James's Park. There is no reason why the bridge should be higher than is sufficient to allow the rowing-boats to pass underneath as they now do under the suspension bridge."

ARCHITECTS' ASSOCIATION FOR NORTHAMPTONSHIRE.

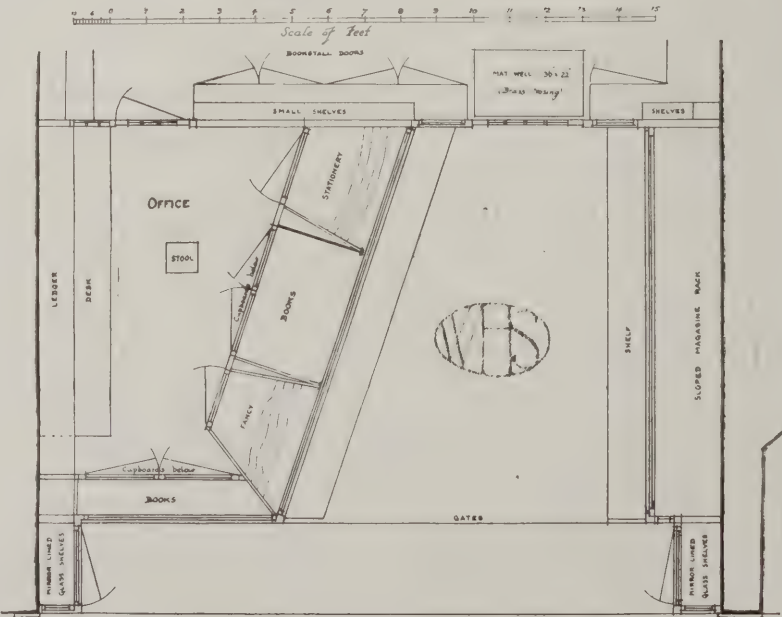
A new association has been formed, to be known as the Northamptonshire Association of Architects, which will be open to architects in practice in the town and county as members, and to architects' assistants and pupils as associates. The object of the association chiefly is to promote the general advancement of architecture, and the various arts and sciences connected therewith. The association is fortunate in its first president, as Mr. J. A. Gotch, F.R.I.B.A., of Kettering, has kindly consented to fill this position, and Mr. Sidney Harris, F.R.I.B.A., will act as vice-president, whilst the secretarial duties have been undertaken by Mr. Herbert Norman, of 4, Wood Hill. The association will in no way clash with the existing Architectural Society, but will be more or less affiliated with it, as the objects of both are to a certain extent identical.

A MODERN SHOP.

The shops which Messrs. W. H. Smith and Son have erected in London and throughout the provinces strike a new note and come as a welcome relief to the customary plate-glass arrangement. The one shown by the illustrations on this page is a representative example. The woodwork is of light Austrian oak, and the fascia of 3 in. dark green tiles, with cream lettering. The entrance floor is laid with mosaic, and the step is of white Sicilian marble inlaid with lead letters. In the isometric view the wind screen (a most effective device) is omitted, for the sake of clearness, but the photograph shows it in position. The following are the principal dimensions of this shop front:—Length of frontage 19 ft. 8 ins.; height from pavement to underside of screen, 8 ft. 8 ins.; depth of doorway from edge of step to front side of door, 13 ft. 6 ins. The design emanates from the Shop Fittings Department of Messrs. W. H. Smith and Son.



ISOMETRIC VIEW



PLAN

SHOP OF W. H. SMITH & SON, MARKET PLACE, HUDDERSFIELD.

BUILDING CONDITIONS IN NEW SOUTH WALES.

The Master Builders' Association of New South Wales have favoured us with a copy of their annual report for the year ending January 17th, 1911, from which, it may be imagined, a fairly complete view of trade conditions in that portion of the Commonwealth of Australia may be derived, as well as a useful means of comparing notes as to relative conditions in the old country.

The State of Trade.

As to the state of trade, it is noted that the early part of the year reported upon was unfortunately marked by a very serious stagnation on account of the disastrous coal strike, which had the result of closing down all the brickyards, and thus causing for three months an absolute stoppage of the building trade of Sydney. There was, however, redoubled activity as soon as a start could be made, and many large and important buildings were erected during the year. The City Council built expensive new markets, and portions of the old markets having been demolished large new theatres were built on the site. The Government spent large sums in the erection of various public buildings throughout the State, among the most notable being the Registrar General's Department, King Street, Sydney; the Long Bay Penitentiary; abattoirs at Homebush; and the Commonwealth Stores at Darling Harbour. Probably the class of buildings which have shown the greatest increase in number during the past year have been motor garages and theatres—an indication of a prosperous community. The cost of building works actually completed in Sydney and the suburbs during 1910 is returned by the Water and Sewerage Board at £2,569,529, with an additional £27,981 for buildings beyond the radius. The actual amount spent on building works during the year, however, is estimated at £4,668,524. The outlook for 1911 was regarded as decidedly promising, but a shortage of labour was feared. The shortage of labour that had been already felt was chiefly with respect to masons, but carpenters, bricklayers, and plasterers were also in great demand.

State Socialism.

It is observed that the advent of a Labour Government in the State has been marked, as was to be expected, by a revival of the claim that works could be carried out under the day labour system cheaper and better than under the contract system, and in spite of the fact that not so many years ago publicly appointed commissions enquired very thoroughly into the system, and found that Government Day Labour work cost considerably more than the same work could have been carried out for under the contract system, the new Minister for Works has declared in favour of carrying out a number of Government works by day labour, and has also declared his intention of starting a State-owned brickworks. The result of these further experiments in the domain of State Socialism will be watched with interest by the Association, and it is to be hoped that the departments concerned will be required to keep their accounts in such a way that an actual comparison can be made of the cost of these day labour works, although experience has shown in the past that items of expenditure which should be included to give a fair comparison are not charged up, as a rule, to the works inquired into. The Association has, during the past year, become affiliated with the Public Works

Contractors' Association, and the arrangement entered into provides for the holding of joint committee meetings to discuss matters of mutual interest; the first matter to be dealt with being this very question of day labour for Government Works.

Relations with Architects.

The relations between the Institute of Architects and this Association have continued to remain on an excellent footing throughout the year. The demand for the Association's conditions of contract showed a further increase during the past twelve months, and there has not been a single dispute brought before the Committee during the year.

The Quantity System.

During the past twelve months the quantity system has been working, on the whole, very smoothly. There still appear to be one or two architects who try to get their work done without quantities, and have on one or two occasions succeeded in doing so, but the advantages of the system, to all parties concerned, have been so conspicuous that architects and proprietors alike are falling into line almost unanimously, and the Committee feel sure that as long as the members uphold the agreement arrived at between this Association and the Institute of Architects, it will not be very long before the system is absolutely universal.

Industrial Disputes.

The year 1910 has been one of considerable expense, both in time and money, to the Association in settling claims brought before the Wages Boards by the various unions connected with the building trade. In 1909 the stonemasons, builders' labourers, and plumbers had their claims settled by Wages Boards. In 1910 both the Builders' Labourers' Union and the Railway Commissioners appealed against the Builders' Labourers' Award, but with very little result. In the Commissioners' case the appeal was dismissed, and costs were given against the Commissioners, and in the labourers' case the appeal was dismissed, except on two very minor points. The plumbers' award was appealed against by this Association and the Colonial Sugar Co., and though the appeal cost the Association a considerable amount of time and money, the appeal was upheld on many important points, and the only point given against the Association was the question of wages, the award being upheld on this point. Claims made by the carpenters, united labourers, bricklayers, tilayers and plasterers, were settled during the past year, each by a separate board, the two latter awards having been arrived at by conferences between the parties during the time that the boards were sitting. The slaters, tilers, and shinglers also applied for a Board, which sat for about three months, but had not yet delivered its award.

With reference to the present system of settling industrial disputes by means of wages boards, the Committee is of opinion that the Act should have allowed for one board to deal with the whole of the employees in the building trade, such board to consist of a sufficient number of members to allow of each trade and section of labour being represented, both on the employers' and employees' sides. Some of the awards now in existence vary considerably as regards the conditions laid down, and in others, although apparently the conditions are intended to be the same, the wording of the awards drafted by different chairmen varies to such an extent that the average layman is not very sure

whether they mean the same thing or not. On the whole the awards have been accepted as fairly satisfactory both by employers and employees.

Workmen's Compensation Act.

The new Act which came into force on the 1st January, 1911, had not been in operation long enough for the Committee to be able to judge of its effects, but the immediate prospect is undoubtedly that a heavier amount of money will have to be spent by the employers generally in insuring themselves against claims from injured workmen. Under the old system a certain amount was spent by the employees themselves by weekly contributions to the insurance fund paid by the employers, and this system has now been abandoned, the full amount of insurance being now paid by the employers.

The Apprenticeship Question.

The difficulties attending this important question, which is even more acute in New South Wales than in the old country, are unfortunately no nearer a settlement than they were twelve months ago, although compulsory apprenticeship is now included in the carpenters', bricklayers', plumbers', tilayers', and plasterers' awards, and will probably be included in the slaters' award. The new award of the carpenters coming into force on July 1st next had the effect of increasing the number of apprentices legally bound, on account of the fact that the old award, although including compulsory apprenticeship, had, to some extent, been forgotten by a good number of employers. Unfortunately, different awards prescribe different conditions as regards apprenticeship, and these different conditions are apt to cause a good deal of confusion. The apprenticeship question is also largely bound up with the question of technical college education, and the Committee is of opinion that should circumstances permit, a conference should be held during the coming year between all bodies of employers and employees connected with the building trade, together with representatives of the technical college, and if some satisfactory scheme of apprenticeship could be drawn up, joint application should be made to the Government for legislation, or failing the Government, by joint application to the various wages boards concerned. During the year the Association has continued the system of giving prizes, through subscriptions from the members, to the building trade students at the technical college, and this action has been very highly appreciated, both by the technical college authorities and the students themselves, who esteem very highly the certificates and prizes given by this association.

Measurement of Timber.

Another matter that has recently engaged the attention of the Committee has been that of timber measurement, a practice having grown up recently of selling T. and G. hard wood flooring, which measures 3½ ins. on the face, as 4-inch T. and G. hard wood flooring. Representations on this matter have been made to the leading timber merchants, and the Committee trust that the outcome of their representations will result in the abolition of this practice.

The Social Side.

The social side has not been neglected; and, besides the annual dinner, conversation, and picnic, there is, it seems, an annual cricket match with the Institute of Architects—affording an admirable opportunity, it may be supposed, for the respective sides to score off each other.

FEDERATION NEWS.

NORTHERN COUNTIES FEDERATION.

A quarterly meeting of the Northern Counties Federation of Building Trade Employers was held at the Golden Lion Hotel, South Shields, on March 22nd, Mr. John Proud, West Hartlepool, vice-president, in the chair, when forty representatives were present.

The chairman extended a hearty welcome to the representatives of the Darlington Association, Messrs. Guthrie, Stairman, and the Secretary, Mr. F. C. Oliver, who were present at the meeting.

The Executive Council's report upon the proposed alteration to the dressed stone rule was presented, in which it was pointed out that the interpretation given to the Newcastle rule by the Newcastle members was that the members were free to import any machine-dressed stone, irrespective of the rate of wages paid for dressing. The report submitted the replies received from the local associations, which showed that the local associations, with the exception of Newcastle, were in favour of no restriction. Councillor Easten contended that the Sunderland rule was not consistent with fair play. Newcastle might as well adopt a similar rule for the joiners, and allow no joinery work to come into Newcastle. The question was a Federation one; no local association had any right to enter into arrangements with the operatives which penalised the other associations; as far as possible there should be one rule throughout the Federation.

After discussion it was resolved:—"That the Federation approve of the principle of the dressed-stone rule providing for dressed stone coming into local districts without any restriction other than the payment of the standard rate of wage in the district in which the stone is worked." It was agreed that the resolution should be forwarded to the local associations for their consideration and report.

The chairman referred to the fact that Mr. J. W. White, of Sunderland, had been elected to the Presidency of the National Federation. He had the distinction of being the first gentleman from their district to be so honoured. The chairman moved that the congratulations of the Federation be offered to him, which was agreed to with acclamation.

The Secretary reported upon the affiliation of the Darlington Association with the Federation, and was thanked for the successful result of his efforts.

The Secretary reported at length upon the action taken by the Federation with respect to:—Southwick-on-Wear U.D.C. inviting tenders for street improvement works and demanding the return of the priced bills of quantities along with the tenders; Easington R.D.C. inviting tenders for sewerage works and stipulating for the return of the priced bills of quantities, when the deposit would be refunded; Sedgfield R.D.C. re their demand for priced schedules to accompany tenders for their street improvement works at Ferryhill.—All these authorities had refused to consent to the request of the Federation for modification of their terms of inviting tenders and contracting. After discussion, it was resolved:—"That the National Federation be asked to take an early opportunity of taking these grievances into consideration with the object of approaching the Institute of Civil Engineers, and the Municipal Engineers' Association, to have them modified."

The Secretary reported that in the advertisement for tenders no quantities were supplied for the erection of the Horden Miners' Hall and Literary Institute, but,

upon the Federation approaching the architect and pointing out the Federation rule he had made representations in the proper quarter, and quantities had been supplied.

The Executive Council's recommendation with respect to the proposed reduction of the number of representatives upon the Board of Representatives, "That no action be taken with regard to the basis of representation on the Board," was agreed to.

The annual general meeting of the National Federation, held in London in January last, and the Town Planning Conference held in Liverpool in February were reported upon by the respective delegates, who were accorded thanks.

The following notice of motion:—"That it is in the interest of the Federation that application be made to architects, surveyors, and engineers for the return to the contractor of the priced bills of quantities at the termination of the contract, as these documents are the property of the contractor"—was referred to the National Federation to see what they could do in the matter.

A request from the Labour Exchange asking the Federation to suggest two or more gentlemen upon the proposed Advisory Committee for the Northern Counties was considered, and Messrs. F. W. Ranken, John Proud, and W. T. Weir were nominated as the Federation's representatives.

The proposal of the National Federation to join the International Federation of Public Works Contractors, which had been referred to the Centre Federations, was considered, and it was resolved that no action be taken in the matter. The National Federation's enquiry as to nominating a suitable person to give evidence before the Departmental Committee on Lead Poisoning was considered, but no resolution was passed.

A communication from the Builders' Merchants' Alliance, Ltd., with reference to the proposed legislation for the improvement of the building trade was considered, and it was resolved:—"That the communication be forwarded to the National Federation, with a recommendation that the National Federation take the matter into consideration."

The Secretary read a report of a recent decision in the Court of Appeal, *Freeman and Sons v. the Chester R.D.C.* The plaintiffs, who were contractors, sued the defendants for large sums alleged to be due to them under a contract for construction of sewers. The contract contained an arbitration clause in the widest possible terms, referring all disputes under the contract to the engineer of the defendants. The defendants alleged that the works had not been completed to the satisfaction of the engineer, and he had not given a certificate to that effect as provided by the contract; and that they had called on the defendants to make good sewers that were defective. The plaintiffs alleged that the works were constructed under the supervision of the engineer and had been passed by him as satisfactory; that in certain correspondence he had admitted that the period of maintenance had expired; and that he had expressed a concluded opinion that the work as to which the dispute arose was defective. The engineer denied these allegations. Held by Cozens Hardy, M.R., that the conduct of the engineer was challenged in the action, and the matter could not be properly dealt with without his being cross-examined; and therefore, without casting any imputation upon him, the action ought not to be stayed. Held by Justice Buckley, L.J., that the engineer had done nothing

to unfit himself to act as arbitrator within the principle of *Jackson v. Barry Railway Company* and *Ives and Barker v. Willan*, but as the court had a discretion in the matter under the Act he would not differ from the Master of the Rolls.

It was decided to hold the next quarterly meeting at West Hartlepool

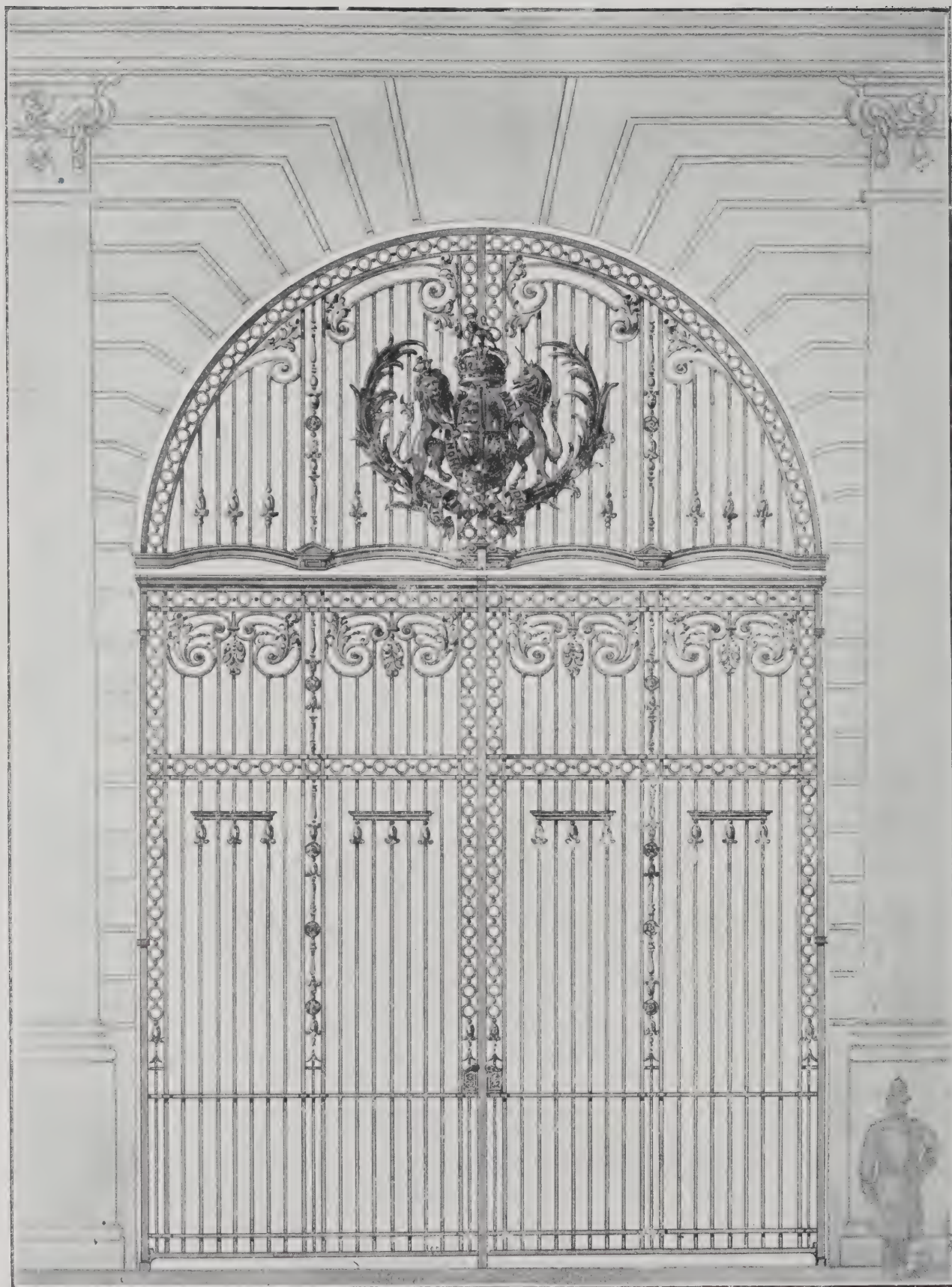
THE NATIONAL MEMORIAL
TO QUEEN VICTORIA.

Ten years have passed since the task of preparing a design for the memorial to Queen Victoria was entrusted by the Executive Committee, appointed by King Edward for that purpose, to Mr. Thomas Brock, R.A. On Saturday week last a portion of the scaffolding was taken down, and the public were able to view the colossal gilt figure of "Victory" which crowns the memorial. It was in June, 1902, that the design, modelled on a scale of one-tenth of the full size, was submitted to his Majesty and approved by him. Afterwards it was exhibited at the Royal Academy. When King Edward asked Mr. Brock how long he would require to complete the memorial from the model he had prepared, the answer was "Ten years." It will be seen, therefore, that the artist has finished his task a year under the estimated time. Since 1902, Mr. Brock has devoted all his time and energy to the memorial. In 1909 it was found possible to complete the lower portion and open it on Empire Day to the public view. The section then disclosed embraced the marble basins, the retaining walls, the sculptured panels, the granite paving, the steps, the plateau, and the bronze electric lamps. In the construction of these no fewer than 1,000 tons of marble and 800 tons of granite were used. Each basin measures 190 ft. in length by 24 ft. in width and 2 ft. in depth. The marble is of the purest Carrara, beautiful in texture and vein. It was most carefully selected, and only 25 per cent. of the quantity cut was eventually used. The water for the cascades is obtained from shallow wells in the gravel at the end of the lake in St. James's Park, augmented by a supply from the lake itself, the quantity required being 108,000 gallons per hour. The pumping force is furnished by engines at the station in St. James's Park. After the water has passed through the cascades and basins it returns to the lake. These arrangements were planned by the Chief Engineer of the Office of Works.

The great central feature of the memorial consists of a heavy base supporting a large square pillar, on the front of which is placed a colossal statue of Queen Victoria. On the remaining sides of the pillar are statuary groups representing "Motherhood," "Justice," and "Truth," modelled to the scale of 16 ft. 6 in. All these are in marble, but the figure of Victory, forming the apex of the monument, and reaching higher than the top of Buckingham Palace, as well as the figures at her feet, are of gilt bronze. The memorial will be unveiled in May.

The Revival of Trade.

The earnings of the Bath Stone Firms for 1910 were rather better than those of the previous year, the report for the second half of the period showing for the whole year a net profit of £9,600, or £1,700 more. This, it is stated, would have been larger but for the hindrance to sea-borne trade by the stormy weather at the end of the year. The increase in earnings, although not large, is a welcome sign of reviving activity in the building trade.



GATES AND GRILLE TO CENTRE ARCHWAY, ADMIRALTY EXTENSION, CHARING CROSS, LONDON
SIR ASTON WEBB, C.B., R.A., ARCHITECT



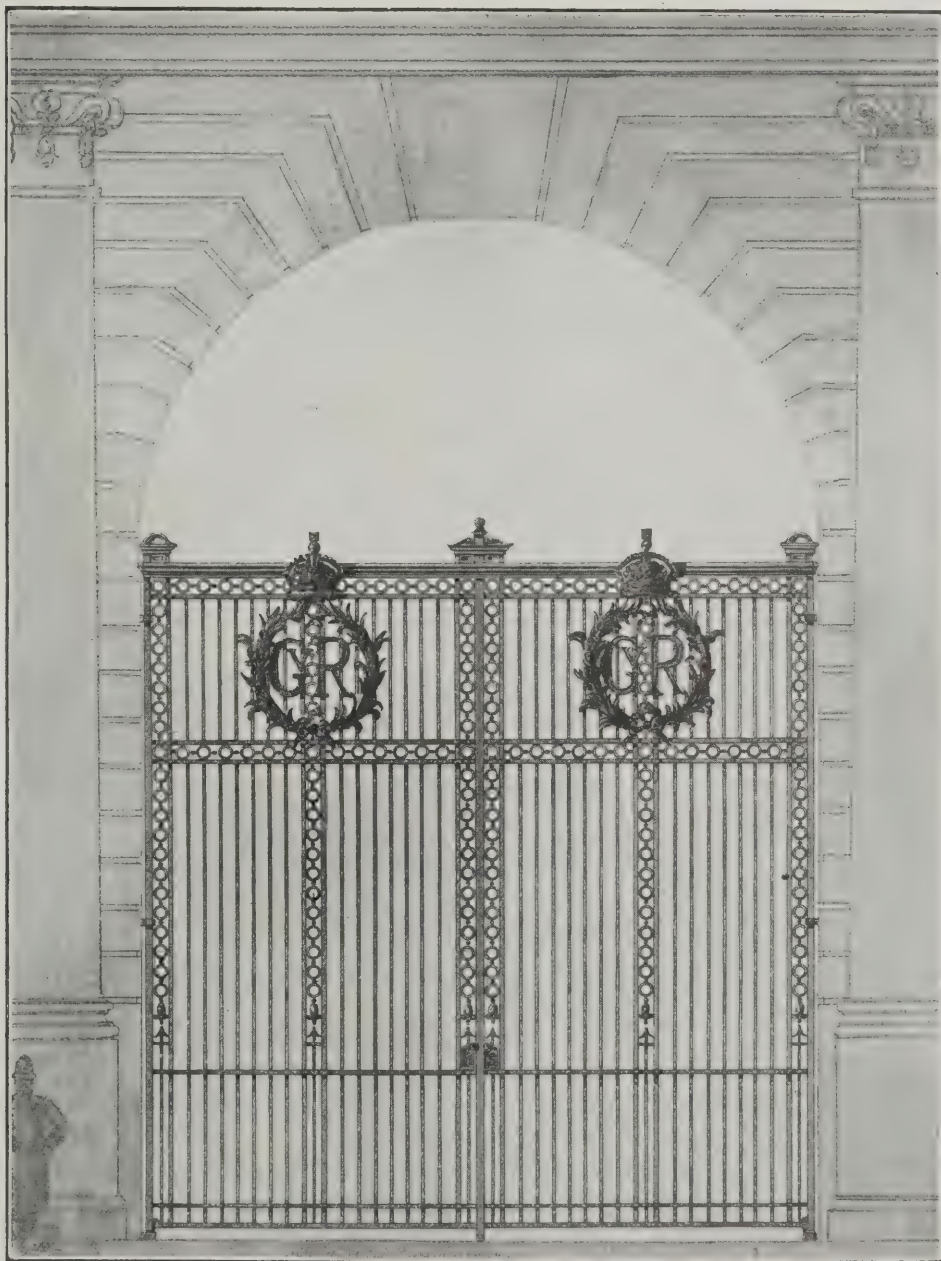
CHAIN-SUPPORT ON EMBANKMENT WALL, NEW COUNTY HALL, LONDON.
GILBERT BAYES, SCULPTOR. RALPH KNOTT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 12th, 1911.

.Volume XXXIII.

No. 846.



ADMIRALTY EXTENSION, CHARING CROSS, LONDON : GATE TO SIDE ARCHWAY.
SIR ASTON WEBB, C.B., R.A., ARCHITECT.

(See page 367.)



BANK OF IRELAND, DUBLIN: TELLERS' SEATS IN THE OLD HOUSE OF LORDS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

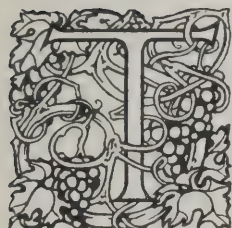
APRIL 12th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 846.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

The New Copyright Bill.



THE new or revised edition of the Copyright Bill was issued a few days ago. To the almost contemptuous treatment of architectural works and architects under the original Bill we drew attention in a former article, and as it is known that the Royal Institute of British Architects have been making efforts to get the new Bill improved in

this respect, it is of interest to compare the two, and see in what position architects now stand with respect to copyright in their designs. It is not very easy to realise this in a document which is rather rambling in its arrangement, and in which the real effect of an enactment can only be arrived at by comparing with each other passages which at first sight seem to be unrelated.

In the former Bill, as we pointed out, the section headed "Remedies in the case of Architecture" amounted simply to a statement that there were no remedies at all, and all the summary remedies legalised in respect of other works of art were cancelled in the case of architecture. The reason for this obviously was that the framers of the Bill could not contemplate so high-handed an action as taking possession of or ordering the demolition of a building because the architect (or the building-owner, if he employed no architect) had illegally reproduced another man's design. The same section re-appears in the new Bill with only some unimportant alterations of wording; but it seems to have been recognised that the heading was absurd, and it now appears as "Restriction on remedies in the case of Architecture," the second clause of the Section running (nearly as before):

"IX. (2). Such of the other provisions of this Act as provide that a pirated copy of a work shall be deemed to be the property of the owner of the copyright, or as impose summary penalties, shall not apply in any case to which this section applies."

At first sight it would seem that we are just where we were, except that we have lost the delightful irony of having the Section entitled "Remedies." The way out, however, is traceable in a new Section under the head "Civil Remedies":

"VI. (1) Where copyright in any work has been infringed, the owner of the copyright shall, except as otherwise provided by this Act, be entitled to all such remedies by way of injunction or interdict, damages, accounts, and otherwise, as may be conferred by law. (2). The costs in any proceedings in respect of the infringement of copyright shall be in the absolute discretion of the court."

Section IX. therefore removes the right by way of injunction or interdict in respect of infringement of architectural copyright, but leaves the architect or building-owner (whichever owns the copyright) with a remedy at common law, in the way of damages. The architect has got his building recognised as an object for copyright protection, though in a manner which seems very grudging and ungracious, as it is really only conveyed in a negative manner; the statement that he cannot have certain forms of compensation by law leaving it to be inferred that he can have the others. It would certainly have looked better if Section IX. had made some reference to the fact, instead of reading, as it

does, merely as a clause directed against copyright in architectural works. And in any case we cannot see why a deliberate copying of another man's design, if proved to be deliberate, should not be treated as a misdemeanour, and be punished by a fine, instead of being merely made subject to a civil action. And the denial of right to an injunction or interdict is a great deal too sweeping. It ought to depend on the stage to which the building has got, and on the judgment of a Court of Law in the special circumstances. If a building is not far out of the ground, and it has been ascertained that copyright is being infringed, to get an interdict to suspend further operations might be the best thing for all parties in the long run; nor is there any unreasonable hardship in compelling a man who has wilfully commenced what is illegal to pull down the work done and begin afresh. It is his own fault; he should have known better. And in the case where the architect is the owner of the copyright, damages are not a sufficient compensation; what he wants is to prevent a crude imitation of his own building being put up. But it is to be feared that neither lawyers nor Parliamentary Bill-drafters will ever be got to understand that.

In another respect the architect seems to occupy a favourable position in the Bill, as he is included among those whose work, even though commissioned and paid for by another person, remains his own copyright. In the original Bill there was a Section providing that where a work was ordered by some other person "for valuable consideration," the person ordering it should be the first owner of the copyright, "unless the work is an architectural work of art, or is an artistic work intended for a public place or building, in which case the author shall be the first owner of the copyright." We never could quite understand the reason of this rather unexpected liberality to artists in the case named. In the new Bill the position is much the same, but it is stated the other way round; the general clause giving first copyright to the author being followed by an exception in the case of an engraving, photograph, or portrait "ordered by some other person"; so that works of sculpture, architecture, and painting (except portraits) remain the copyright of the author, even when "ordered by another person," though one cannot quite see why a sculptured portrait does not come under the same exception as a painted portrait; we should think this must be an oversight. As to the rest, we do not understand the reasoning by which it was ruled that works in architecture, sculpture, or painting remain the copyright of the author even when commissioned and paid for; but we are satisfied with the result of the reasoning, at all events. If this Bill become law, an architect could claim damages from a building-owner who proceeded to erect a duplicate of one of his (the architect's) designs without consulting him. But we should have preferred that a Court might have the power to impose a fine.

Under Section II. there are certain exceptions as to actions which do not amount to infringement of copyright, and they include "making paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art." The main sentence stood in the old Bill, but the parenthesis is new, and

precludes (and is obviously meant to preclude) the measuring up and making complete drawings of a building without the consent of the architect. No parliamentary draughtsman would have thought of that, and we shall probably not be wrong in attributing this important emendation to the suggestion of the Institute Committee. Otherwise than in that way, it appears that anyone may sketch or photograph a building or statue without the consent of the author, and may publish it; or so we gather from the rather vaguely worded provision in Section I., which we print, so that the reader can form his own judgment as to its meaning:

"I. (3). For the purposes of this Act publication, in relation to any work, means the issue of copies of the work to the public, and does not include the performance in public of a dramatic or musical work, the delivery in public of a lecture, the exhibition in public of an artistic work, or the construction of an architectural work of art, but for the purposes of this provision photographs and engravings of paintings, drawings, works of sculpture, and architectural works of art shall not be deemed to be copies of such works."

The meaning of that appears to be that you may not only make drawings of pictures, sculptures, and architecture, but may publish them without any reference to the original artist; and in that case it would be a mere form of courtesy to request an architect's permission to illustrate his work. It does not seem quite fair; the meaning should have been stated more explicitly, so that there could be no doubt about it.

It is to be regretted that nothing is contained in the Bill as to the ownership by the architect of his own drawings, a subject on which there has been so much legal misunderstanding. One passage only seems to bear upon the subject in an indirect manner:—

"II. (2). . . where the author of an artistic work is not the owner of the copyright therein, the use by the author of any mould, cast, sketch, plan, model, or study made by him for the purpose of the work, provided that he does not thereby repeat or imitate the main design of that work."

This is one of the exceptions which do not constitute an infringement of copyright; so that the conclusion is that, even where the author may have assigned away the copyright in the complete work, the drawings and studies for it remain his own property. In the case of the sculptor and painter this is tacitly admitted; in the case of the architect it has been decided against him by the latest precedent in a court of law; so that this assumption in the Bill is an assumption contrary to the law as it at present stands. In any future case as to the ownership of an architect's drawings, this clause could certainly be cited as a presumption in his favour; but it is only a presumption to be deduced by reasoning from the wording. The Bill ought to have made a clear statement on the subject.

A serious difficulty will probably arise on one question, namely: What constitutes "an architectural work of art"? The use of this phrase, in Section I., Clause 3, is the only expression in the Bill which implies that it is artistic design in architecture which is to be protected; no attempt is made anywhere to define the qualities in a building which would bring it in the category of a work of art; nor, we will admit, could any such definition be safely attempted in an Act of Parliament. But it is not to be supposed that a mere ordinary building, with so many windows and a cornice, is defended from imitation as being copyright. At what point, then, does it become "a work of architectural art"? This seems to be left for judges and juries to settle; a prospect which is not re-assuring either from the legal or artistic point of view.

As to the general question, it is well known that some eminent architects (and among those who may especially claim to be artists) are opposed to any idea of copyright in architectural design. They argue that the whole of architecture has grown up and progressed on the basis of imitation and repetition, styles having been slowly developed, little by little,

by a process of slight improvements in detail from generation to generation. But the modern position is rather different. Architecture is in these days much more of an individual art than it ever has been before, and individual design in this form has as much claim to protection as individual design in sculpture. And there have been flagrant instances recently of imitations of buildings, which had a character of their own, to the great annoyance of the original architect. This, at all events, could be stopped by the present Bill, which is so far an advantage, and which would not, we think, be accompanied by any disadvantage to the artistic development of architecture.

The King Edward VII. Memorial.

NOW that the idea of placing the King Edward Memorial in St. James's Park has been abandoned, the last suggestion, made in the House of Commons last week, is to erect an arch over the Mall somewhere near the same spot. We do not agree, however, with any such proposal. An arch should either form the entrance to, or the exit from, something; to place one in the middle of the course of the Mall would be, in an architectural sense, absolutely without meaning. It is, perhaps, as well that the formerly proposed scheme has been abandoned. We thought the objections to it much exaggerated, and we would certainly prefer to see a well-designed stone arched bridge over the lake to the present commonplace suspension bridge; as far as that part of the scheme goes, it would have been a manifest improvement. But the scheme as a whole would no doubt have somewhat altered the character of St. James's Park, and as it appears to have been distinctly unpopular it is as well let alone; it would be a pity to build a memorial which would cause annoyance to a number of people, even if their annoyance is not quite reasonable. If the scheme of completing a circular *place* outside the east end of the Mall, and placing the memorial there, which would be an ideal scheme, cannot be carried out (though we must say that we do not believe in its impossibility), we would suggest that the Memorial be erected in the centre of the Mall, just westward of Sir Aston Webb's building. The road is wide enough to admit of that; the statue would face that of Queen Victoria at the other end of the Mall, and it would have the new building as an effective architectural background. Its base, of course, in that case, must not be too wide, but there is room for a sufficiently effective pedestal in the middle of that very wide road, and it is a position suitable in every other sense. The idea is certainly worth considering.

English Furniture at South Kensington.

IN the Galleries of the Victoria and Albert Museum, South Kensington, are now on exhibition the recent acquisitions of English domestic furniture, representative models of all periods from the Gothic to the early nineteenth century. It is evident from these examples, says a writer in the "Times," that the English craftsman could always hold his own, although it is only in recent years that the peculiar qualities of his handiwork have been generally appreciated. The English Gothic has a distinct character, and several small pieces of this period have recently been added to the collection. Among them is a Gothic side table dating from Henry VII. It is a very rare specimen of English furniture of a period of which few examples have survived to the present day. Mr. J. H. Fitzhenry, a generous friend of the Museum, has given a set of eighteen misericords from an English Gothic church. Another interesting accession is a pair of Gothic carved oak columns bearing coats of arms. These came from an old house in Bury St. Edmunds. Examples of Elizabethan furniture lately added are a Nonsuch writing box or desk, and a spice box of rosewood inlaid with floral designs, the latter a very unusual example of the work of the period. Furniture of the time of James I. is represented by a coffer found in Cornwall. Coming to the latter part of

the seventeenth century—the period of Charles II.—there are to be found among the recent acquisitions a remarkable example of a child's chair, and another chair of that period, both in an excellent state of preservation. The time of William and Mary is represented by a chair of the same kind as those to be seen at Hampton Court, and by a beautiful table showing that excellent marquetry work was done in that period. The design of the table seems to be purely English, as distinct from the Dutch, which was not of such choice quality; affording evidence that England was in advance of the Continent in craftsmanship of that style at that date. A bureau and bookcase and a handsome stool with a wool-work cover are recent additions of the time of Queen Anne. When we come to this period it is even more difficult for the Museum to purchase worthy specimens than it is in the case of other periods. The authorities have made the best use of their opportunities, and have managed to acquire a few interesting things, notwithstanding that the prices paid for furniture of this period have so greatly advanced. There is everywhere a very general demand for English furniture of the eighteenth century, and it is a significant fact that a large house has been opened in Berlin for the exhibition and sale of "Englische Möbeln des achtzehnten Jahrhunderts."

The Georgian period is represented among the new acquisitions by Chippendale hanging shelves, showing the effect of Chinese influence, and by a very choice mirror of a slightly earlier date. The influence of the Adam brothers is noticeable in a hall seat presented by Mr. William C. Alexander.

From Gothic times up to the period of Charles II., furniture was mainly of oak. In the time of William and Mary it was principally of walnut; from the middle to the end of the eighteenth century nearly everything was of mahogany; and at the end of that period satinwood became the fashionable wood. A very fine satinwood writing cabinet is among the recent additions to the collection. An interesting acquisition is a grand piano of the early nineteenth century, presented by the late Sir W. Q. Orchardson, R.A. This will be a familiar object to a large number of his admirers, since it is represented in more than one of his popular pictures.

The New Gates at the Admiralty Extension.

THE large wrought-iron and bronze gates which close the openings in the Admiralty Extension building, at the Charing Cross end of the Mall, are now being erected, and will soon be completed. The gates were designed by Sir Aston Webb, R.A., and have been executed by Messrs. Strode and Co., London. They are the largest of their kind in the United Kingdom. A large number of skilled smiths have been engaged on this work, a dozen forges having been employed continuously. The centre gates are 34ft. high, and

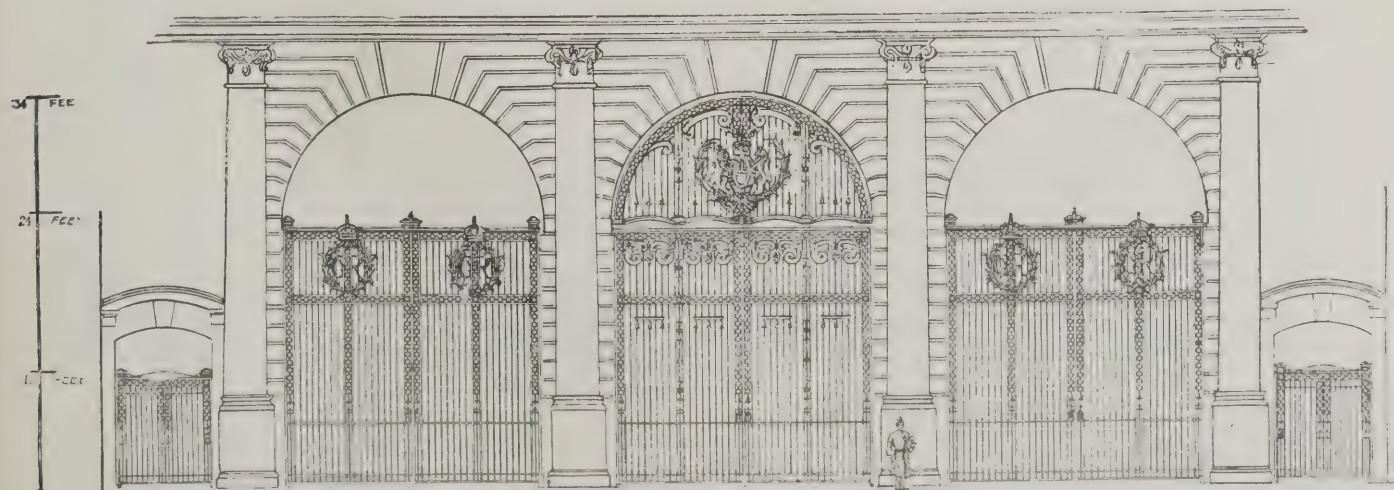
20ft. wide. The weight of iron used in the construction of the gates, and the grille above, is about 25 tons. The grille alone weighs about four tons. The Royal Arms on the grille, and the wreaths on the gates, are in cast bronze, and weigh about two tons. They were specially modelled under the direction of Mr. Douglas E. Strode.

A "Peter Pan" Statue.

A "PETER PAN" statue, which Mr. J. M. Barrie commissioned Sir George Frampton, R.A., to make for Kensington Gardens, is to be exhibited at the forthcoming exhibition of the Royal Academy. Peter Pan stands on a gnarled tree-trunk, round which the pixies and fairies are emerging from their crannies at the call of the magic music. "One fairy," says a writer in the "Star," "has a quizzing look of curiosity, another of half fear and half delight, while a third, in the most realistic fashion, is whispering to her, 'It's all right; don't be afraid!'" And so—stealthily, in beautifully fine curves—they are moving up to Peter Pan. One fairy has crept to the top, with one dainty foot resting on a tree fungus. She looks up in ecstasy. Then two others are watching a squirrel, who seems to be urging them to answer the cry of the reeds. All around are rabbits and mice and birds. The rabbits have just stopped in their play, and are listening with delight, mingled with charm. Up near the top of the trunk, sulking in a cranny, is Solomon Caw, the crow, the only pessimist in Tree Land." The sculptor confesses that he has never done anything which has interested him so much. The work is to be cast in bronze, and will be 9ft. high.

The Society of Painters in Water-colours.

THE speech of Sir Henry Cunynghame, at the dinner of the Society of Painters in Water-colours, held at the Trocadero the other day, ought to arouse the sympathies of all lovers of art. Next to nothing, he said, had been done for the education of the public in the appreciation of what he rightly described as a peculiarly English form of art. All the greatest water-colour artists are English; France has done little in that branch of art, and that little is not very good or very characteristic of the material. A certain number of English water-colours, Sir Henry said, are shut up in portfolios in the British Museum; a collection of one man's works was to be found at the Tate Gallery (but that one, we must remember, is the greatest of all); and the fine collection at South Kensington was put in a wretched room. That criticism might perhaps be met by re-arrangement of the rooms; and on the whole we do not know that the South



WROUGHT IRON AND BRONZE GATES, ADMIRALTY EXTENSION, CHARING CROSS, LONDON.
SIR ASTON WEBB, C.B., R.A., ARCHITECT.

Kensington collection can be considered quite a representative one, though it contains a good many fine works. It is quite true in the main, however, that we do not make the most of this beautiful and peculiarly national art. The President (Sir E. Waterlow) informed the meeting that the lease of their Gallery in Pall Mall East would soon expire, and that they would not be able to obtain a renewal of their tenancy, except at great expense on rebuilding; and as an unendowed Society they looked for assistance from their patrons in this crisis. We believe they will obtain it; the Society is far too important an artistic body to be allowed to decline for want of means; but the question naturally occurs, why should such expense be forced upon them? The Gallery is a very good one as it stands. That, however, is part of the general burden of oppressive conditions under which leaseholders in London have long groaned, and from which there seems no prospect of relief.

London County Hall: Alteration to River Facade.

IN April, 1909, the London County Council approved a design for the elevation of the new county hall, and in the following December they accepted a tender for the preparation of a model of the new building in accordance with this design. In November, 1910, the Establishment Committee reported that they had had under consideration a proposed modification of a portion of the river frontage of the building, and the Council agreed to the proposal that the model should be altered so as to show the effect of the modification. This alteration has now been completed, and the model was exhibited at yesterday's meeting of the Council. The modification consists in the omission of the cross colonnade in the centre portion of the river frontage, the order being carried round the crescent. Mr. Norman Shaw and Sir Aston Webb (the assessors in the competition) and the Council's superintending architect (Mr. W. E. Riley) are of opinion that the modified design is a considerable improvement, and the selected architect, Mr. Ralph Knott, considers that it will form an entirely satisfactory elevation. Mr. Knott suggested that the specification for the substructure of the first portion of the building should provide that the steel to be used shall be of British manufacture. The Establishment Committee concur in this suggestion, and have given instructions accordingly. The specification will also provide that the steel shall comply with the tests required by the "British standard specification."

The Competition System.

THE important competition for the new library and art gallery to be erected at Manchester (the preliminary designs for which will be arriving at that Town Hall at the end of this month) gives the text for an article on architectural competitions in the "Manchester Guardian." The writer, after dealing with the growth of competitions, and some of the outstanding results, goes on to speak of the number of designs submitted. He says: "The number varies greatly, being as a rule less in the case of a large competition which involves much work than for a building costing from £5,000 to £10,000. For the Houses of Parliament 97 designs were received, for Manchester Town Hall 125, and for London County Hall 99, while for many smaller buildings 200 or 300 designs have been frequently submitted. Some idea of the work entailed may be suggested by the statement of the winner of the London County Hall competition, who confessed to working at his design for two months every day (including Sundays) from ten in the morning till midnight. Apart from the labour of draughtsmanship, which is considerable when the drawings may number as many as a dozen, a great amount of time and thought must be spent on the invention of a plan which must satisfy the designer as well as fulfil the requirements. The variety of plans possible for

even a comparatively limited site is almost endless, and before attempting to begin the actual competition drawings the architect may spend days in making rough sketches of various plans that suggest themselves to him, although the best plan is sometimes the result of a lucky inspiration. The disappointing side to the system is the great waste of labour necessarily involved. In order to minimise the amount of time spent by competitors there should be strict instructions that the designs should be to a small scale and in outline. An interesting exhibition of drawings might be made from the 'rejected' designs of distinguished architects. Such designs as Cockerell's for the Royal Exchange, London, or 'Greek' Thompson's design for the Albert Memorial, suggest possibilities of beauty never realised. The discovery of fresh genius is one of the best results, however, and in recent years the Liverpool Cathedral and the London County Hall are instances of this, as the architects are both young men of no previous renown 'discovered' in the course of the competition. The 'limited' competition does not offer this advantage, for the term 'limited' means that a selected number of known men are asked to submit designs, as was done in the case of the Manchester Royal Infirmary a few years ago. In any case it is of great importance to obtain an assessor of taste, and experience, and fortunately for Manchester this has been done in the case of the new library buildings." Professor Blomfield is the assessor.

The Architectural Association Exhibition.

AT the Rooms of the Architectural Association, in Tufton Street, Westminster, the annual exhibition of sketches and photographs by members is now on view. There is no catalogue, and many of the drawings and photographs are not signed, so that we cannot in all cases credit the works to their authors. In the first-floor gallery the larger photographs are hung; not very many, but very good; they are large photographs, mostly from various cathedrals, the interior views being very satisfactory. The remainder of the works are hung in the meeting-room. The drawings are mostly small ones. A rather larger water-colour of the west front of Peterborough by one member is careful, but hard and mechanical in style; there is not what may be called water-colour feeling about it. A small drawing with the same monogram signature, of the two towers of Jumièges rising above the trees, possesses much more artistic style. Mr. Crace lends his geometrical drawing for a scheme of colour decoration for the Royal Exchange, and a new drawing of Philæ before it was inundated, which has a painful interest now. Mr. Farley exhibits a good drawing of part of Palladio's Basilica, and Mr. Keir a very fine one of the stairs of Waterloo Bridge, with their massive masonry details, as the whole would have appeared, or did appear, before the making of the Embankment. Mr. A. L. Snow contributes some good pencil sketches, among them being an excellent view of Ipswich Dock. The only exhibitor of etchings is Mr. Vey; he has a good many small views of buildings and streets in this medium. We are always glad to see architectural sketchers taking to etching, which is the highest class of black-and-white work, and in some ways one of the most difficult. It requires a great deal of judgment in understanding what etching can and cannot do; what lines to put in and what to leave out. Mr. Vey's etchings suffer at present from having too many lines. It is a common fault with professional etchers, but it gives an untidy look to the etching, and looks like the refuge of an etcher who is not sure of his method. The ideal style of etching means a large proportion of untouched paper, and no line put in without a meaning. If Mr. Vey studies the etchings of Mr. Frank Short, which are perfect examples of style and execution, he will probably realise the artistic value of the etching done with few lines. The etcher, in fact, should take to heart the counsel of "studying what lines to leave out."



BANK OF IRELAND, DUBLIN: THE OLD HOUSE OF LORDS.

THE BANK OF IRELAND, DUBLIN.

THE Bank of Ireland, formerly the Houses of Parliament, is the most notable building of the eighteenth century in Dublin. Its architectural history perhaps exceeds in interest its political record. Without knowing this history, one would say that the façade was the design of one man, finely conceived, well detailed, and carried out as a whole, whereas it is the growth of nearly a century, and the work of four or five architects. It is very remarkable that each of these men in his own way should have furthered the evolution of the building towards the complete development that we now see. This, of course, applies only to the exterior, for the interior no longer serves its original purpose.

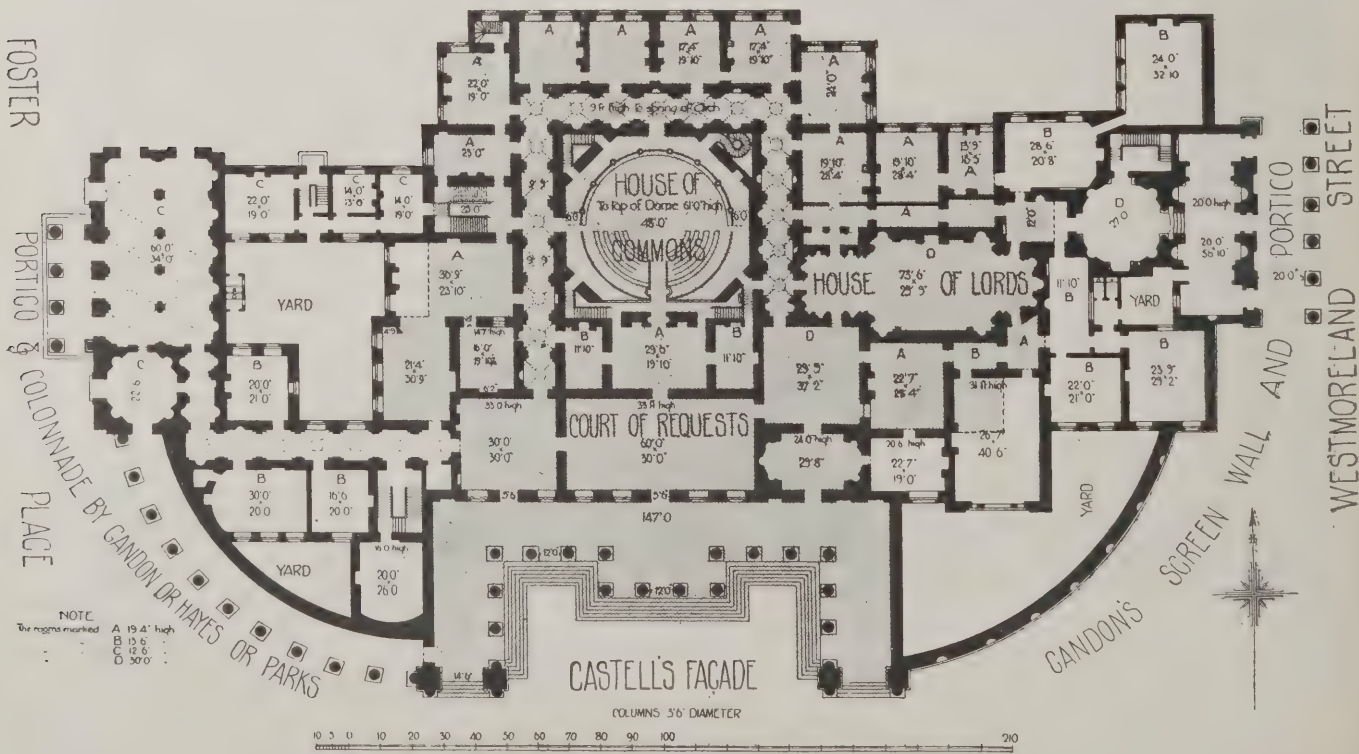
The first portion was begun in 1728-9, on the site of old Chichester House, in which Parliament had met since the Restoration, and was completed in about ten years. The façade consisted of the central and two wing porticoes only, behind

which were the Houses of Lords and Commons with the various offices. Both to the east and west it abutted on old buildings. On the former side were mean hovels and lime kilns, and on the latter stood Daly's Club House. And so it remained until 1784.

Before going further it will be well to consider the authorship of this part of the design. Official records give the credit of it to Edward Lovet Pearce, Surveyor-General at the time. This young man was a captain in Neville's troop of Dragoons, but lately returned from campaigning in the Low Countries. It is hardly probable or even possible that he could have gone through the training absolutely necessary to gain a knowledge of classical architecture so accurate and thorough as shown in this design, to say nothing of the power to apply it so finely. There were "ghosts" on the earth in those days, even as in these modern and decadent times. For-



BANK OF IRELAND, DUBLIN: GENERAL VIEW.



PLAN OF DUBLIN PARLIAMENT HOUSE, 1800.

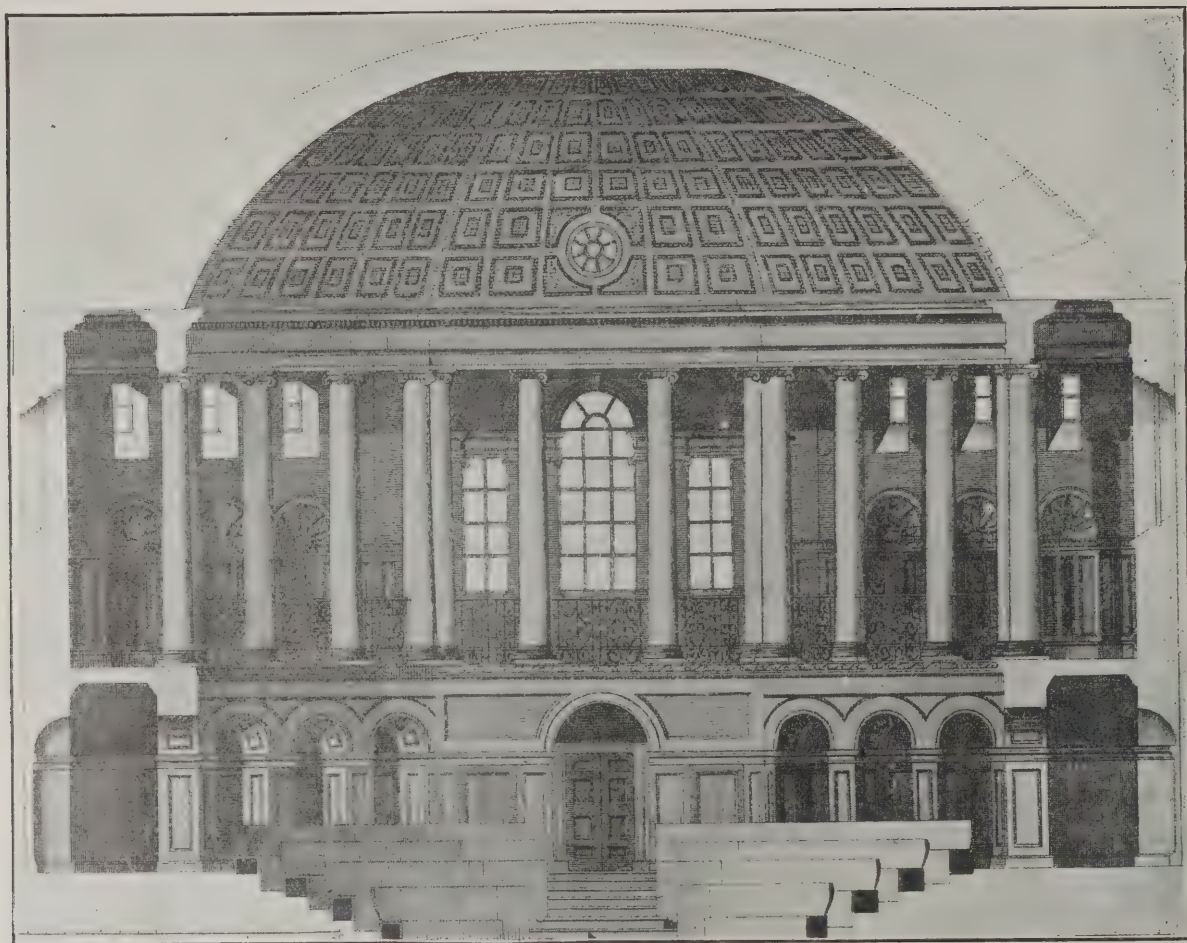


BANK OF IRELAND, DUBLIN: HOUSE OF LORDS PORTICO.

unately it is fairly easy to materialise this "ghost." Pearce's authorship was scoffed at from the first, and a pseudonymous writer of the time published a set of Latin verses plainly stating that a certain "Castellus" was the real architect. Other references to him and a comparison of his known work confirm this. The man thus identified was Richard Castell, Cassels, or Castles, as he is variously called. He was a German invited to Ireland by Sir Gustavus Hume, of the county of Fermanagh. His work on the Parliament House and elsewhere plainly shows him to have been a well-trained and able man, with a turn for vigorous detail. He was doubtless the Castell who in 1728 published his "Villas of the Ancients," a theoretical restoration of Pliny's Villas and others described by Varro and Columella, and the influence of this study can be clearly traced in the design of the House of Lords, with its coffered barrel roof, high-set lunettes, and apse beneath. Moreover he was something of an engineer, and constructed the Newry Canal, with the first stone lock, in Ireland. He afterwards obtained a large practice, leaving works all over the country, and died suddenly in 1751.

We find that in 1778 the Peers were desirous of adding a new entrance and other accommodation, but owing to the state of the country the undertaking was deferred. In 1782 it was revived, and the work placed in the hands of Thomas Cooley, but this scheme also was given up. Various architects were then consulted, who agreed that owing to the steep fall of the ground on the east side, the proposed additions were hardly practicable. James Gandon was finally called in, and undertook to make a design which should solve the problem. The chief difficulty was this: if the Ionic

order of the rest of the building were adopted for the columns of the new portico, the fall of the ground would compel the use of a podium and steps, or pedestals for them to stand on. The former would obstruct the new street (Westmoreland Street) which was to be made, and the latter would be a trivial and undignified makeshift. Gandon therefore devised a curved screen wall with blind window recesses to connect his work with Castell's façade, and on this he carried round the original Ionic entablature, and varying it slightly in the new portico, supported it on Corinthian columns whose extra length enabled their bases to be laid practically at the street level. He purposely omitted any enrichment of the screen wall by attached columns in order to enhance the richness of the portico and to prevent undue clashing of the two orders. To this very sensible and successful departure from hard and fast rules he managed to get their lordships to agree, which at a time of strict academic correctness and dilettante purism was remarkable. It did not, however, escape adverse comment, and once when Gandon was asked on the works by some passing dilettante what order he was using, he replied, that "the order was a substantial one, being that of the House of Lords." The work was begun in 1785. A year later the Speaker of the Commons asked Gandon to undertake some additions to the west side of the building. The latter was unwilling to do this as he was hard at work on, and much worried by, the building of the Custom House. However, as he was pressed, he consented. The Speaker sent him requirements and dimensions, and he made sketch plans, strictly carrying out his instructions. These were returned to him for slight alterations, and nothing more was done for some months.



PARLIAMENT HOUSE, DUBLIN: SECTION OF THE HOUSE OF COMMONS.

He then met the Speaker, who asked him to give his opinion on a design made by Col. S. Hayes, M.P., an amateur. Gandon was annoyed, and more so when he found that Hayes's design was on quite different lines from those laid down for himself. It was agreed to submit both plans to the decision of the members. To this meeting Gandon brought another design, which was pronounced to be the best, and adopted. Again there was a long silence and delay, until Gandon discovered that although his design had been adopted he was not to carry out the work, which was given to Robert Parks, another architect, and completed in 1794. Gandon claimed that the finished work exactly corresponded to his accepted design. Col. Hayes, on the other hand, in a letter written at the time, says that it was carried out precisely in accordance with his first sketch, except that he took from Gandon the idea of niches instead of windows in the screen wall. In the face of these opposing statements it is impossible to get at the truth, but that it was a discreditable piece of jobbery, and that Gandon was badly treated, is pretty clear.

In February, 1792, while the House of Commons was sitting, the dome was destroyed by fire caused by a new heating apparatus installed by a "smoke doctor" named Nesbit. It was not rebuilt, but was replaced by a wagon-headed roof with high brick wall and chimneys having a "disgusting appearance," whatever that may mean.

The plan shows the building as it stood in 1800, when by the passing of the Act of Union its occupation was gone. The centre tinted part is Castell's first building. On the east is Gandon's screen wall, portico, etc., and on the west is the Gandon-Hayes-Parks open colonnade and House of Commons portico, and additions.

In 1802 the Bank of Ireland bought the whole building from the Government for £40,000 (about the cost of the first portion), and several architects were asked to send in plans for adapting it to the uses of the bank. The first premium of

£300 was awarded to Mr. H. A. Baker. He was a pupil of Gandon's, who later on, when his master retired, was recommended by him to the authorities as being capable of supervising the completion of his (Gandon's) work. He may have been equal to this, but he has shown his ignorance and incapacity elsewhere in Dublin, and it is very doubtful if he had any part in the design of what was done at the Parliament House. He evidently gave up architecture to become secretary of the Hibernian Academy. It was Francis Johnston, the last architect to come on the scene, who actually carried out the work for the bank, and who saw so clearly the way to pull together the differing parts of the great façade, and weld them into the harmonious whole which, in spite of the juxtaposition of the two orders on the east, we now admire. To do this he pulled down the screen wall on the west and built it up behind the free columns, thus making them into three-quarter attached columns, repeated this treatment with Gandon's wall on the east, and thus created the two symmetrical unpierced wings which contrast so finely with Castell's open porticos in the centre. He placed a top-lighted banking office behind the centre portico, and filling up the windows underneath it added a monumental touch to the whole. The only important room of the old Parliament House which remains intact is the House of Lords, now used as a Board Room. The effect of its lighting by means of lunettes high up at each end is very happy. The contemporary tapestry hangings on the side walls are by Robert Baillie, of Dublin, and represent, one, "The Battle of the Boyne," the other, "The Relief of Derry."

The section of the House of Commons is taken from Pool and Cash's Views of Dublin's Buildings, and in a measure it justifies their quaint encomium that "prejudice itself must acknowledge that the British Empire (we might have added Europe herself) cannot boast of so spacious and stately a senatorial hall."

GODFREY PINKERTON.

CORRESPONDENCE.

Points in Domestic Architecture.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Knowledge of the editorial disgust which results when coat-tails attractively trailed suffer neglect and are not trodden on encourages me to take up a few points in your interesting leader (April 5th) on "Domestic Architecture." Your complaints both as to excessive "picturesqueness" and affected simplicity—the merely negative in design—are certainly just; as also is your sweeping condemnation of half-timber work as used under ordinary conditions to-day. Surely, however, there is rather more to be said in favour of the pitch roof than appears from your treatment of the subject. Is it so sure that high-pitched roofs were always the result of lack of skill in carpentry and slating? In many cases in the Middle Ages such roofs were covered with lead, for which finish the flat roof was in all ways better adapted and commonly employed where (as in castles and towers of all sorts) use was made of the "leads." Surely much less skill is required to construct a floor and cover it with lead than for any kind of pitch roof? Whatever may be said of the pitch roof as a present-day anachronism in mediæval times at least its adoption must frequently have been from preference for visible roofing. In all northern climes, moreover, steep roofs which throw off snow and wet must always have strong claims on those grounds alone. As to the "agreeable and architectural house with a flat roof," the problem has been

essayed. Mr. Edgar Wood has, in fact, in some sort solved it, as may be seen in the illustrations of a house of his design recently published.

The fashion for low rooms may easily be overdone, but it must not be forgotten that it is cheap, and that small low rooms seem larger than small high ones, which produce a feeling akin to living in a box. Windows also may be too much reduced, though by-laws usually preclude this; but how uncomfortable is a room over-windowed—sun-parched and wind-swept. Let us live in the open air if we must, but when we are indoors, let us feel it.

EDWIN GUNN.

London, E.C.

Architect, Builder, and Client.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

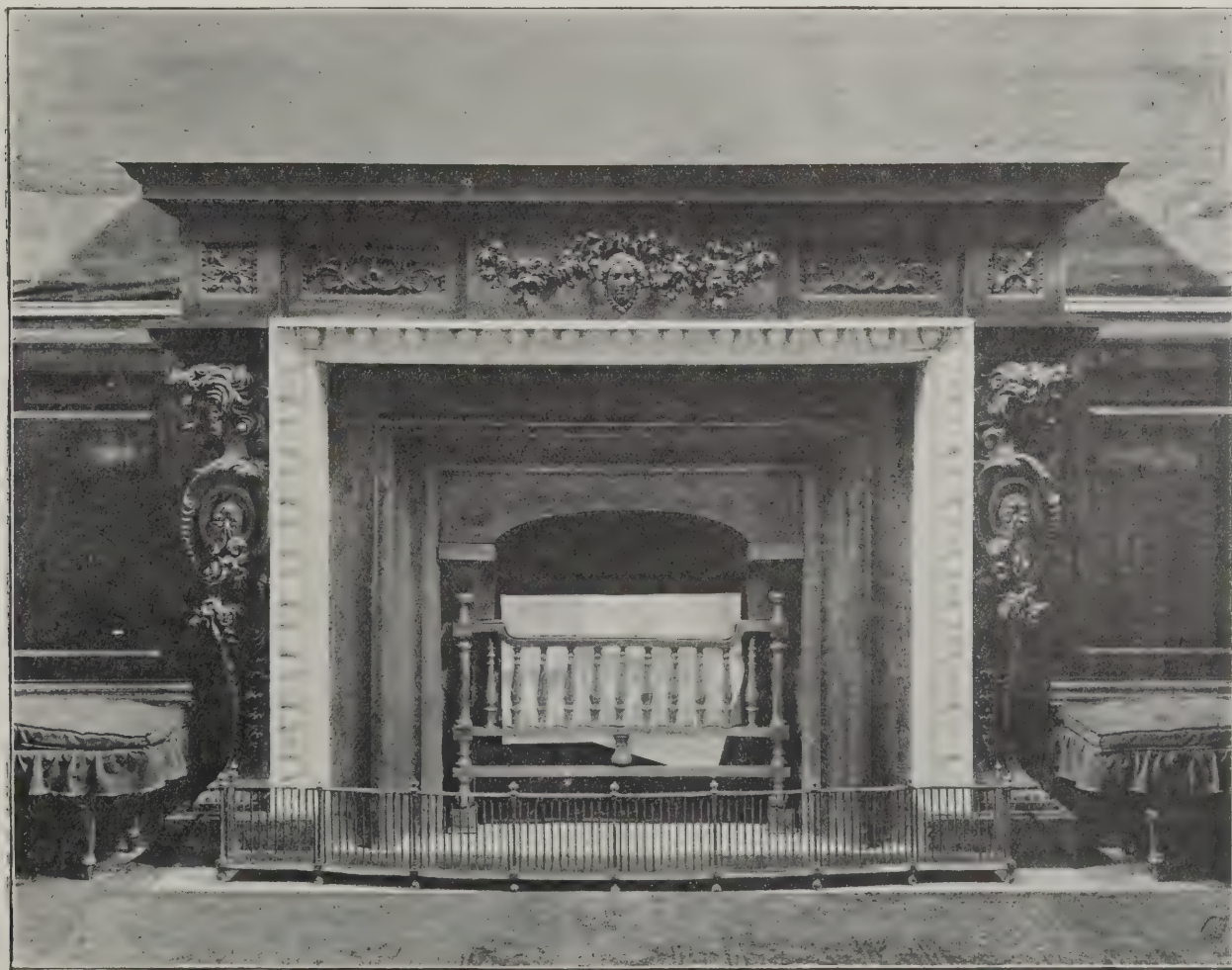
SIR,—The efforts of Mr. Ogden through his "laconic" observations (in your issue of March 29th) to procure a better understanding between the profession and the trade ought to be vigorously taken up in official quarters, and not allowed to drop until a reformation has resulted. There are root differences existing, under which builders groan, and from which no relief will be possible until the form of contract existing between the R.I.B.A. and the Builders' Federation is radically amended. I do not agree with all Mr. Ogden's remarks, although they terminate with a note of hope and a generosity of feeling that augur well for future relationships between the profession and the trade. Cannot a conference be called for the discussion of the right of a builder to appeal under the arbitration clause against

wrongful condemnation of materials or workmanship? Could not we discuss the propriety of including the names of builders as arbitrators, which are now by implication and practice rigorously excluded? Could we not also discuss questions concerning a time limit for the retention of final certificates and the justice of charging interest on overdue accounts?

Then there is also the question of commission on specialists' accounts, which you have commented on in your columns, and upon which builders feel they have strong title to liberal concessions on the simple ground that the commission is in almost all cases faithfully earned.

Perhaps some of us may think that Mr. Ogden makes a fetish of "dry rot," but recent judgments must unsettle many minds that had hitherto thought they enjoyed immunity from action for damage. There is no subject about which information seems so scanty and about which ignorance is so widespread (the ignorance not being confined by any means to the laity); yet there is no move made in official circles to combat it by the spread of exact knowledge that might fortify the community against the enormous amount of wastage from the insidious parasitic fungus.

It is very gratifying to find so influential a voice as that of Mr. Ogden speaking a word on behalf of the builder. The emancipation of the trade from the wrongs that burden it will not—I profoundly believe cannot—come from within. When the deliverance does come, I have no doubt it will be found that we owe to the ability and fearlessness of your advocacy an incalculable debt; for it will be to you and to the men in the architectural profession that you have been instrumental in awaken-



BANK OF IRELAND, DUBLIN: CHIMNEYPiece IN THE OLD HOUSE OF LORDS.

ing that thanks must be given for the removal of inequalities that are often so cruel in their incidence. You have entered upon a path that is difficult, as the path of the reformer ever must be, but I am sure you will not look back. The trade has been stultified by much injustice, both in its craftsmanship and—I deplore it—in its moral tone. It will be no mean accomplishment if your efforts and the efforts of those who think with you, result in revitalising the one and exalting the other.

The above implies no reproach to the many architects I know, and to the many I don't know, whose fine sense of justice and honour makes them ideal men and ideal masters. JOHN M. MACFARLANE.

Manchester.

The Spire of Salisbury Cathedral.
To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—In your notice of the exhibition of the Society of Painters in Water-colours, the writer criticises a drawing of Salisbury Cathedral on the score that "the spire is not set quite straight on the tower."

Has it been forgotten that the spire is, in fact, some two feet out of the perpendicular, and has the artist possibly been led to exaggeration by remembering it?

Pall Mall, S.W.

MAX JUDGE.

GARDEN CITY BUILDING REGULATIONS.*

The First Garden City, Ltd., Building Regulations, Revised Edition, 1911, have been issued, price sixpence net. They are a revision of the building regulations adopted in 1905, and have been amended in accordance with the experience that has been since acquired. They are, of course, in no sense by-laws under any local authority, but are the regulations adopted by a civil company letting leasehold land for building. They include, however, the by-laws of the rural authority of which their estate forms a part.

The regulations extend to 130 in number; and while it cannot be said that they show any marked divergence from the ordinary provisions, it is therefore the more obvious that they present in very handy form a collection that should be exceedingly useful for adaptation to similar circumstances to those pertaining to Letchworth. Almost everything that a builder may do, or is expressly prohibited from doing, is set forth in explicit terms, and the booklet is in that sense a guide to good building practice. A good index greatly increases its value.

*First Garden City, Ltd., Building Regulations, Revised Edition, 1911. 88 pages, 7½ ins. by 4½ ins., price 6d. net. First Garden City, Ltd., Letchworth.

School, Hampstead Garden Suburb.

The result of this competition is announced as follows: 1, Mr. W. G. Wilson, 5, Bloomsbury Mansions, Hart Street, W.C.; 2, Messrs. Spalding and Myers, 36 and 37, King Street, W.C.; 3, Mr. John Hudson, 24, York Place, Portland Square.

Building in London.

A book on the subject of the law and practice affecting building work in London is to be published at the end of next month by Messrs. Constable and Co. The author is Mr. Horace Cubitt, A.R.I.B.A. Special articles will be included relating to the cost of building work in and around London and the valuation and rating of London property.

ARCHITECTURE IN PAINTINGS.

By SELWYN IMAGE, M.A., Slade Professor of Fine Art, Oxford.

In his paper read before the Architectural Association on April 3rd, Professor Selwyn Image described and illustrated the diverse ways in which great painters of various times and schools have depicted architecture. Incidentally he found occasion for luminous and altogether delightful criticism on the paintings themselves.

NO doubt the subject of "Architecture in Paintings" may be dealt with from more points of view than one; for instance, from the architect's point of view, or from the painter's; or, again, from the point of view of theory, or of history, and so on.

One may say that the treatment of architecture by painters may be divided under at least seven heads—possibly under more, if one wishes to go minutely into the matter—but these seven may perhaps serve for our immediate purpose this evening. What are they?

Canaletto and Guardi.

First, there are those pictures in which architecture is dealt with purely or mainly for its own sake. I am not, of course, thinking of merely literal, topographical representations, which may be extremely valuable and interesting, and even charming, but hardly come under our notice at the moment. I am thinking of the work of considerable painters, as such, yet whose chief aim has been to show us faithfully how such-and-such buildings or groups of buildings at a given moment looked, and who were capable of doing this with a certain artistic effect superimposed, the painting having a value as painting beyond its value as a literal transcript of fact. As types of such paintings we may take the works of the two Venetians, Canaletto, 1697-1768, and Francesco Guardi, 1712-1793. Of these two Guardi was the freer in his execution of the two—I should put him certainly well behind Canaletto. Or, again, we might take our own English Academician, David Roberts, 1796-1864.

Michelangelo.

Secondly, there are the paintings in which architecture is definitely imitated, as if part of the construction of the work; the artist is literally building, not with marble or stone, but with his brush and his paint. The most famous type of all such work is, of course, Michelangelo's ceiling in the Sistine Chapel, 1475-1564. In the hands of so immense and unrivalled a genius as Michelangelo, who was himself, remember, an architect as well as a sculptor and painter, the work is a consummate success. But in lesser hands the attempt after this kind of architectural painting may easily be disastrous enough. Certainly the many disasters it has given rise to make one feel how no man should attempt so Herculean a task who has not attained to our own Alfred Stevens's ideal of knowing only one art, the name of which is architecture, painting, sculpture, and all the accompanying crafts. Perhaps, in passing, you will let me note about the Sistine ceiling and the splendour of its colour. When I saw it, now many years since, the first thing about it that struck me was this splendour of its colour. And yet Michelangelo, with the strange modesty of great genius, at first held back from undertaking the great commission on the ground that he was not a painter.

Crivelli, Marco and Raphael.

Thirdly, there are the pictures in which the architecture, though not, as in the Sistine ceiling, deceptively imitative of actual construction—of course, in a framed paint-

ing this could not be—is yet a fundamental part of the design treated with an independent dignity, as if there for its own sake—just as in a jewel of the fine order it is the setting that counts, not merely the stone.

In the earlier and middle Italian work especially is this treatment common and amazingly impressive. The author showed three examples of this treatment. The first, an Annunciation, by Carlo Crivelli, 1430-1493; the second, a Circumcision, by Marco Marziale, of about the same date, the exact years of his birth and death being apparently uncertain; the third, the famous *Andsei Madonna* of Raphael, 1483-1520.

In this Crivelli, indeed, the architecture is almost the picture; if the picture were not so beautiful and so marvellously executed, considering what the subject of it is, one would be inclined to complain a little of the architecture as over-dominant. It is, however, at any rate, a miracle of drawing, of sumptuous decoration, and of colour. But though there is no lack of proportion in the design and its execution, there is certainly a lack of proportion in the motive or idea of the picture—it is little else, all said and done, than a bit of stupendous decoration.

A nobler creation was Marco Marziale's presentation of the Circumcision. The architecture here, as in the Crivelli, is of importance for its own sake, beautiful and highly decorated, too, but it is not the whole picture, or anything like it; the incident and the figures are the thing, and the architecture sets them off duly, appropriately—it does not swamp them.

A greater picture than either of these was the work of a far greater artist, the *Madonna degli Andsei* of Raphael. Again, here, the architecture is of the first importance, beautiful in its chaste dignity, but this time without any seductiveness of curious or rich ornament; now it is proportion and delicacy alone that make their appeal to us. Indeed, throughout the entire picture there is ornament little enough. But round the canopy of the throne and round its base runs the whole Greek key pattern in gold—that amazing invention, which, in spite of its endless employment and endless vulgarisation, one never wearies of. Have you never noticed how Raphael has drawn it in this picture? If not, notice it the next time you go to the National Gallery. He has drawn it quite "freehand," as the saying is. The gold lining is not the same thickness throughout, the repeat is far from mathematically exact, the pattern only just manages to get itself into the space. And yet how much of the charm of this ornamentation here does really depend on this free treatment! Look at it and think how much would be lost if all were mechanically, rigidly perfect! Do not misunderstand me. I am not counselling students to draw carelessly and flourish about. But when a really great draughtsman sets compasses and ruler aside and trusts to the sensitiveness of his hand, how incomparably enchanting is the result!

Fourthly, there are the pictures in which architecture is assuredly very important in the scheme of its design, and yet only important as its main accessory, as adding, that is, a certain effect of sumptuousness

in the background of the main composition.

Paul Veronese.

I am giving you as examples of this treatment two pictures by Paul Veronese, 1528-1588. The first is the famous and magnificent "Family of Darius at the Feet of Alexander," after the Battle of Issus in 333 B.C. There needs, I think, no insistence on the motive of the treatment of the architecture here; it is obvious, and it is like that in so many of Veronese's pageantry designs—the superb "Marriage at Cana of Galilee," for instance, in the Louvre.

In "The Adoration of the Magi," the architecture is even more prominent or obtrusive than in the Darius picture, but it is still of the nature of an accessory. Up in the left-hand corner of the design a portion of the building is ruinous and overgrown with weeds; so that perhaps here we are verging upon a merely picturesque accessory. I shall have a word to say a little later on that quality of picturesqueness so intimately associated with the representation of broken forms—the broken forms especially of buildings. But the love of picturesqueness, in this sense, is comparatively a modern sentiment, and in this Veronese design the ruinous condition of part of the architecture may be not so much picturesque as symbolical—the pride of this world shattered and brought low before the divine child sheltered even here amid these stately columns, under a hastily erected shed. In a much earlier Florentine picture, "The Martyrdom of St. Sebastian," by Antonio Pollainolo, a similar question suggests itself. Here a magnificent triumphal arch in the background is shown all broken away at its top, as if to hint, so to say, by a touch aside, that the persecution of the Church assured its triumph and sealed the doom of the pagan authorities so cruelly, yet in vain, raging against it. In any case, of course, not too much is to be made of this symbolism, even supposing that symbolism it is. Yet both Pollainolo and Veronese may well have thrown it in, a detail by the way, in their designs, giving to them some slight additional significance for those who were curious to examine their paintings more than cursorily.

Bellini and Mantegna.

We pass on to those pictures in which, though the architecture is perfect, and stately, it is in scale small and unobtrusive, quite carefully and even elaborately presented, yet in the distance as an incident in the further background. This treatment was illustrated by the two famous brothers-in-law, Giovanni Bellini and Andrea Mantegna—Bellini, 1428-1516; Mantegna, 1431-1506. The breadth, softness, and serenity of this "Infant Christ Asleep on the Lap of the Virgin" are wholly characteristic of Bellini; and these qualities are notable, not only in the treatment of the main figures, but in the placid movement of those little figures, too, and of the cattle in the background; and also, surely, in the disposition and lighting of the towers and castellated walls lying so peacefully up the hillside there beyond them. All this peacefulness and serenity are here only to be in harmony with and to emphasise the motive of this particular picture—the Infant Jesus asleep on His Mother's lap.

Although contemporaries, and so closely connected, from Bellini to Mantegna is a far cry. In the latter's representation of "The Agony in the Garden," in the middle distance stretches a fair and stately group of buildings, the City of Jerusalem accurately and minutely delineated in her

strength and pride. Although to serve but a distant detail, Mantegna, whose love of architecture and sculpture was predominant, and in everything that he painted his passion for precision amazing, designs and draws for us each building here with elaborate care; nothing is slurred over or merely suggested; bit by bit the whole range of the buildings is deliberately in detail made out for us. Yet it is part of the miracle of Mantegna's work that with all his passion for precision, and his love of detail from one corner to the other of his pictures, we are not distracted, as in Crivelli, by a multiplicity of adornments; but everything holds its place in justly calculated relation of subordination or precedence, the central motive of the design remaining paramount in its human interest, and in its dignity and largeness of effect.

So far we have seen architecture treated by the painters as a thing so dignified and important that even when it enters into the design only as an accessory and on a small scale in the background no looseness or liberties are to be allowed in the delineation of it. Perhaps it was not until a later age, when, for reasons which we cannot here stay to inquire into, the enjoyment of landscape, and the representation of it for its own sake, began to prevail, that any other pictorial treatment of the mother of the arts was impossible or even unthought of.

That Titian, 1477-1576, was one of the first, or the first, of the great masters who thus dealt with landscape in a serious manner for its own sake is a commonplace familiar to every student; and there are many splendid landscape designs and studies of his extant to bear out the statement. In his famous "Noli me tangere," in the National Gallery, it is not mere fancifulness to recognise in the treatment of the buildings in the right-hand upper corner of the background the stirring of a different feeling towards the pictorial treatment of architecture from anything previously seen—even when the buildings have been background accessories on a small scale, as in the Bellini and the Mantegna.

Now what is the change that has come or is coming about? At its beginning, and here we are at its beginning, it is naturally something easier to feel than to analyse and put formally into words. But may we not say that evidently Titian's concern with the group of buildings in this picture is simply as to their providing him with a dark mass of something in the distance against the sky to serve as a useful mass in the balance of his design? That it is a mass, not of rocks or trees, but of human habitations, is natural, because, as a rule, even a pure landscapist likes to get into his scene some hint of humanity—it vitalises and warms up the scene. But, apart from this, the mass is thought of simply as a mass, the interest in the buildings as buildings is negligible. That is not so, as we have seen, with Bellini or Mantegna; but, I venture to say, in this Titian it is. We are coming now to a period, to a phase of thought and feeling in which the painter will use architecture purely for pictorial effect, as a mere item in his design providing some required mass, or space, of light or dark; the actual forms and details of the architecture will, in consequence, comparatively matter little to him, and their delineation as such will be often vague, or even, in a certain sense, careless.

Fifty or sixty years after Titian's death, and this—shall we call it for distinction

purely pictorial attitude towards and employment of architecture?—has become common enough. It is clearly emphasised in a grand landscape by Gaspar Poussin, 1613-1675. It is obvious that here the interest is not in any sense in the buildings of the distant town as buildings, but only as they afford an elongated stretch of light balancing the carefully designed lines and masses of the landscape, charmingly illuminating and vivifying it. The more pure landscape appeals to painters, and the emotions it is capable of arousing are insisted on as the subject of their pictures, the more will this treatment of architecture in their compositions assert itself. Indeed, it is imperative; for obviously it would militate against the effect and impression they are seeking after were they to introduce their architecture more elaborately delineated; it would destroy breadth by focusing the attention on details of construction in a single part of their design, just as in another way it would be impossible in such a landscape as this of Poussin's to treat the foliage leaf by leaf, as in Bellini's Peter Martyr, or the foreground with Mantegna's weeds, without disaster to its entire scheme and purpose.

The Dutch School.

And now we have come to the seventh, and last, heading of our subject, as I have mapped it out for the purpose of this evening's paper. Under it I am showing you, first, a picture by Albert Cuyp, 1620-1691, "A Ruined Castle in a Lake." Here, certainly, there is architecture prominent enough; no mere accessory of the general design for the sake of symbolism or play of massed light and dark—the building is itself the thing. Yes, but what is the artist's interest in it? The answer springs to our lips at once—he is interested in the building just for its picturesqueness. He would not have felt the same interest in it supposing the castle were standing in its first pride of completeness and unshattered strength, alert with busy life within and around; but to-day it is deserted, its walls broken and crumbling; over them weeds may now clamber unmolested, and hooting owls circle by night. And the charm of all this ruggedness and decay it is that arrests him hauntingly. Or look again at another picture, this time by Ruisdael, 1628-1682, of a motive very similar—the castle here yet more utterly a wreck, just one tottering, crumbling tower and wall of it left, all overgrown at their base with tangled bushes, its design and plan clean perished out of sight. Or, again, a landscape of Hobbema's at 1638-1709, a design of trees with cottages nestled among them, such as he loved to paint. It is true the cottages are not in ruins, busy countryfolk inhabit them; but they are old and weather-beaten, their timbers are warped, and the lines of their roofs and walls have sunk into quaint irregularities. Smarten them up, make their crooked places straight, and their rough places plain—and then? And then Hobbema will say to you, "My friend, you've left me nothing worth painting!"

The Modern Sentiment of Picturesqueness.

How long a way we have travelled in these minutes I have been speaking to you from those elder Italians, with their love of order, stateliness, clarity, precision; and have passed not merely through many years, but are come out, as it were, at last into a new and vastly different world of artistic conception and enjoyment.

Now all this rugged brokenness, this indecision and irregularity of mass and form, we have learned to speak of as picturesqueness, and to be strangely attracted to and impressed by it. The love of it is comparatively a modern sentiment; and perhaps it could only have arisen in times when men were settling down into a sense of some assured security and physical comfort, and were growing to look upon Nature, not as a world of lurking danger, but rather of friendliness and charm. And as this feeling grew there would grow with it the desire to depict natural scenes, and the sense that, whenever into such scenes were introduced human habitations and signs of human toil, these must in their forms be congruous with the lines and masses and colours of surrounding nature—these, which are never rigid, hard, monotonous, but endlessly and inextricably diversified. And since, as in the elder days, when man and man's work were the main motives of art, the presentment of nature was conformed to their orderliness and precision: so, as Nature began to assert herself as for her own sake a motive of his art, the presentment of man and his work, this in its turn was now accommodated to Nature, to her infinite variety of form, and her shifting play of colour and of light. And so, I think, you will see that our modern love of what we call picturesqueness in the treatment of architecture has a reason and justification in the order of things.

Discuss'on.

Mr. Christopher Whall having briefly proposed a vote of thanks,

Mr. Gerald Horsley, in seconding, said that one aspect of Professor Image's paper was particularly interesting to them as architects. He referred to the early and middle periods of Italian painting. Raphael's "Madonna," in the National Gallery, for instance, spoke eloquently of the sympathy which existed between painters and architects at that time; the influence in the present case being clearly that of Bramante. Reference to Botticelli, too, brought to one's mind the work of Brunelleschi; and Titian and Veronese, again, recalled the sympathy existing between the Venetian painters and architects. These instances, continued Mr. Horsley, emphasised the advisability of cultivating the society of their fellow-craftsmen. Their own work would gain, and painting would reflect the artistic association.

Mr. Arthur T. Bolton said he was glad that Professor Image had selected the National Gallery for the pictures to illustrate his lecture. The sequence was admirable; and if they went to the National Gallery, passing through the rooms of the Italians, the Venetians, and the Netherlands, they would observe an identical development. They could not fail, he thought, to be struck with the enormous development from the time of Giotto to the present day. Raphael's cartoons were undoubtedly the real origin of landscape painting. Speaking of the modern representation of architecture by painters, the speaker deplored the obvious lack of taste that was all too frequently manifested. If one tried to advise a painter with regard to architectural treatment, however humbly, the advice was invariably ignored. Veronese, the speaker continued, was a personal friend of Palladio, for whose buildings he prepared frescoes. Alluding to Michelangelo's picture in the Sistine Chapel, Mr. Bolton said that its charm depended very largely on the enormous mass of white employed. Reynolds in his "Discourses," the speaker believed, mentioned how he failed to understand why a picture

of the Flemish School should seem to lack the colour that he had believed it to possess upon a previous examination. The explanation was that in the first instance he had carried a piece of white paper with him, for the purpose of making notes, and looking at this had produced the effect of heightened colour. With reference to Professor Image's appointment to the Slade Chair at Oxford, Mr. Bolton enquired how it was proposed to teach architecture to the undergraduates. The task was terrible, but probably fascinating in its difficulty. Visiting Oxford recently, it had occurred to him while in the Taylor and Randolph building, that an index of the architectural drawings might well be prepared on the lines of that at South Kensington, though of course on a smaller scale.

Mr. Arthur Keen observed that Ruskin came and lectured to the Association in his day, and their predecessors probably enjoyed Ruskin's lecture as they had enjoyed Professor Image's. The earlier pictures, such as those of Crivelli, were obviously designs by the painters themselves; but later actual existing towns were represented. Speaking of the desirability of more intimate association of painter, sculptor, and architect, Mr. Keen said he believed that the Academy could help considerably in attaining this object. The lecture was admirably arranged and beautifully expressed.

Professor Image, in reply, said that wild horses would not drag from him his proposals with regard to Oxford. But he did intend to convince Oxford of the importance of architecture—to show that it was as necessary to preserve Winchester Cathedral, for instance, as it was that we should retain Rembrandt's "Mill."

TWO NEW LONDON BUILDINGS,

The Royal Academy of Music.

The new building in Marylebone Road, now in course of erection for the Royal Academy of Music was visited by members of the Architectural Association on April 1st. In a building of this kind it is of course most important to lessen the conduction of sound between the different practising rooms. The methods to attain this end which have been adopted by the architects (Messrs. Ernest George and Yeates) are largely experimental, and the results are awaited with much interest. The building of a large concert hall in America is delayed until it is seen whether the precautions taken in this case are efficacious or not. The whole of the internal walls, except those in the basement, are built in lime mortar, stock bricks being used. All 9 in. walls are battened and lathed both sides, walls of more than this thickness being considered soundproof.

Partitions are formed with two 3 in. thicknesses of "Frazzi" partition with a 6 in. air-space, the partitions resting on steel joists covered with sand and felt. Steel joists forming floors are not built into walls, but have their ends resting on stone templates covered with felt. The floors are formed with "Frazzi" slabs resting on the bottom flange of steel joists, directly above these slabs being a layer of sand 2 in. thick covered with 3 in. of coke breeze having a screeded face to receive flooring. The joists themselves are cased with fine concrete, and a space is left above them with a slab over, keeping the steelwork free from the upper surface of the floor.

The building is of Portland stone and red brick. Joinery is of teak. All music rooms have double doors of 2 in. teak. A

fine staircase with galleries and marble columns will be a feature of the building. The large concert hall will have a reinforced concrete vaulted ceiling with wood roof over.

The ground floor is devoted to staff and waiting rooms, luncheon rooms for students and professors, with kitchen and heating chamber and room for organ power in the basement. The power to blow organs on upper floors is conducted right up the building by means of earthenware shafts. A lift is provided for pianos.

Messrs. Wallis and Sons, of Maidstone, are the contractors.

The Swedish Church.

This church, and the premises in connection with it, were also visited by the Architectural Association on April 1st. The buildings (of which Messrs. Niven and Wigglesworth, F.F.R.I.B.A., are the architects) are in Harcourt Street, a rather mean little street off the Marylebone Road. There are three portions: the church (with gymnasium under) being placed in the centre, with the Pastor's house, on the north and the school buildings and committee rooms on the south. On either side of the hall on the lower ground floor are smaller halls which can be thrown into the larger hall, or used separately as desired. The church is placed at first-floor level and is reached by a double flight of stone steps. The vestibule has a modelled plaster ceiling, and is lighted by a row of small square windows high up. A vaulted screen supports the carved oak front of the gallery at the western end of the church, this gallery extending over the vestibule.

The body of the church is lighted by four long and narrow Early English windows with Bath stone dressings. Bath stone also is used for the walls of church and vestibule for a height of 10 feet, above which is plaster stippled. The aisle and chancel are paved with Hopton Wood stone and black marble slabs. Steel lattice girders support a pointed barrel vault in plaster richly modelled, coloured, and gilded. The ornamental ironwork in the building is particularly well designed, and has been excellently carried out by a London blacksmith.

The school block contains schoolrooms, and residential accommodation for the schoolmistress and deaconess, with bath-rooms and kitchen attached.

The exterior is of Portland stone with a roof of Westmorland green slates. The *flèche* is of teak covered with copper. The plain wall surface is relieved by the Swedish Arms vigorously sculptured in the gable of the church. A.H.J.

VICTORIA AND ALBERT MUSEUM.

Mr. Sydney Vacher has recently presented to the Victoria and Albert Museum a valuable series of studies of Pompeian Ornament and Mural Decoration, made by him in 1879; and a number of these have now been arranged for exhibition in the Department of Engraving, Illustration and Design (Room 70). Among other additions to the exhibition of this department are a series of tracings of old English stained glass, chiefly from the Minster and other churches in York, by Mr. Lawrence B. Saint (Room 71); original designs for woven silks, made at Lyons in the second half of the eighteenth century (Room 72); while, to the collection of tools and materials illustrating the process of making Japanese colour-prints, in Room 74, a case has been added containing a set of Japanese brushes (the gift of Mr. B. H. Webb), and original drawings by Hiroshige, Kuniyoshi, and Kunisada II.

FIRE PREVENTION NOTES.

*Train
Fires.*

Major Pringle's reports on railway accidents ought certainly to be collected for publication in volume form. They embody a vast amount of data and deductions of which it is no mere figure of speech, but the literal truth, to say that they are of vital importance. Such a wealth of information relating to subjects that so nearly concern the public safety, should not be consigned perpetually to the oblivion of Blue-books or the hardly less complete obscurity of newspaper files. His report to the Board of Trade on the disaster at Hawes Junction, on the Midland Railway, in which, last Christmas, twelve passengers were killed, their bodies being partly or wholly destroyed by the fire which broke out as a consequence of a collision, contains some valuable observations on fire dangers. He states that the fire originated with the compressed oil gas stored in the cylinders under the first two coaches of the express. In such an accident, Major Pringle points out, there is greater liability to fire from gas than from electric light, and he recommends the adoption of the latter on long-distance and express trains.

*Extinguishing
Apparatus.*

As to fire-extinguishing apparatus, Major Pringle remarks that "it is no easy matter to obtain access to a fire which starts in the midst of wreckage caused by railway accident," and that "any extingueur of the fluid type, to be of a serviceable character, must be designed, secured, and constructed in a sufficiently substantial manner to withstand violent shocks—it must not be brought into action automatically by the force of a collision." He thinks, however, that for extinguishing small fires, which can be easily approached and localised, extingueurs of some approved pattern will be useful. He thinks that fire buckets are of equal importance, and that one should be carried in each corridor coach and passenger brake-van. The inspector does not say, however, whether in his opinion such buckets should be of special construction, to prevent the water being spilt by the ordinary motion of the train or in the case of a violent collision; nor does he, so far as we are aware, recommend—what would perhaps be more practical—the storage, in convenient places, of supplies of chemical powder, or even of sand, which in some cases would be more effectual than water in smothering flames.

*Fires in Tall
Buildings.*

The fire at a ten-storey factory building in New York, by which, on March 25th, about 160 persons lost their lives, was commented upon in our issue of March 29th, and there is but little to add to what was then said. The accompanying photograph, however, serves to show that we were correct in our surmise as to the satisfactory fire-resistance of the building. The fire broke out in the three upper storeys, and was confined to them, and the deplorable loss of life was consequent on the absence of adequate means of escape, and on the impossibility of rescue at such a height by fire-brigade means and appliances. Two considerations that militate against the provision of permanent means of escape are unsightliness and the facilities they afford for burglary, and it remains for ingenuity to overcome these objections; but it would be criminal to await the solution without adopting all available means to prevent loss of life, æsthetes and burglars

notwithstanding, and a practical and humane people like those of New York are not likely to hesitate over the choice of evils. Nor are they likely to confuse the issue with regard to fireproof construction and the means of escape from the burning contents of a building that is in itself virtually indestructible. There has been, very naturally, a violent outburst against this wholesale and infinitely pathetic waste of precious lives; and while half a dozen various authorities are vehemently denying responsibility in regard to the calamity, there is evident a firm determination on the part of the Government to do all that is humanly possible to prevent the recurrence of a similar disaster.

*Structure and
Contents.*

We have always been careful to discourage the common and mischievous misconception that fire-prevention is the sole responsibility of the architect and the builder. Too often the best knowledge and advice are neglected on the score of supposed economy. But even when the utmost precautions are taken to render a building perfectly fire-resisting—and, indeed, sometimes as a direct consequence of the knowledge of this fact—the building may be made highly dangerous by pursuing within it some specially risky occupation, or by recklessly filling it with highly inflammable goods. When these catch fire, and the

building is burnt out, there is always a disposition to discredit the construction, notwithstanding the evidence that the building may have played pretty much the same part in the conflagration as a stove or grate to its fuel. It need not be claimed that fire-preventing construction has reached finality, and is incapable of further improvement; but it can with perfect truth be said that that side of the subject now needs comparatively little attention. What demands earnest consideration is the internal arrangement of such buildings—the careful disposal of lighting and heating installations, and especially the more careful and systematic bestowal of inflammable goods. Woodwork, it is hardly too much to say, should find no place in modern business premises; and when it is generally superseded by other materials—metal or composition—such as are now available, devastating fires in business buildings will become exceedingly rare. The resemblance to the grate and the fuel will become still stronger, until it should be possible for any accidental ignition of inflammable goods to exhaust itself with very little damage to surroundings.

*Means of
Escape.*

But, after all, the chief problem is, how to prevent such harrowing scenes as were witnessed when those unfortunate girls and women perished in such appalling numbers in the New York factory fire, and when similar catastrophes, equally deplorable though of less magnitude, have afflicted this country. Building owners,



Photo: L.N.A.

FACTORY BUILDING, NEW YORK, SHOWING EFFECT OF FIRE ON UPPER FLOORS.



HONITON CHURCH. AFTER THE FIRE.

Photo: Topical.

and building contractors, are apt to complain bitterly of the restrictions upon building caused by the heavy expense attendant on observing the by-laws imposed by various authorities. They nevertheless admit the wisdom of the principles involved; where they have a real ground for murmuring is in respect to the indiscriminate application of provisions that in numerous instances might be waived without the slightest detriment to the spirit in which they were conceived. There is, of course, the right of appeal; but its operation often involves delay and expense that are sometimes a greater hardship than that for which it is supposed to supply a remedy. It should not be difficult and costly to ascertain in any given instance whether or not the general provisions are applicable; but if appeal were made cheap and easy it might also become frequent and frivolous.

FIRE AT ROSENEATH.

The fire at Roseneath, Dumbarton-shire, one of the Scottish seats of Princess Louise and the Duke of Argyll, might, it appears, have been much more disastrous but for the presence of what is somewhat vaguely and mysteriously described in the newspaper reports as a "fireproof concreted roof," which "prevented the flames from spreading to the lower part of the building." Fire extinguishers and a hose were available, but it is stated that the latter was almost useless on account of its leakages. Whether or not, or to what extent, this report is true, is of less consequence than the suggested general inference that it is really worse than useless to install appliances which are not maintained in efficiency by regular and systematic inspection. There was no fire brigade nearer than Helensburgh, which is seventeen miles distant, but boys from the Empress training ship brought two lines of hose and rendered excellent service in checking the fire. The ultimate damage, however, is estimated at between £4,000 and £5,000. Roseneath, built in a mixture of Gothic and Italian, was erected in 1803, superseding a house which dated from 1630, and was destroyed by fire.

THE FIRE AT HONITON CHURCH, DEVON.

On Sunday, March 26th, the old church of St. Michael, Honiton, as we have already reported, was almost entirely destroyed by fire. The tower, containing a peal of five bells, and fragments of the walls, are all that remain of the once magnificent church. The cause of the outbreak is at present unknown. The church stands on a commanding position, on a hill south of the town. The screens and lower part of nave and west tower were probably erected by Bishop Courtenay (1477 to 1487). The sanctuary and aisles were rebuilt in 1520 by John and Joan Takell.

The west tower is of ordinary Perpendicular type without any adornment. The whole church is also built in the same style. The capitals of the piers of the

nave are well carved, with conventional foliage patterns. On two of them are inscriptions:—"Pray for ye souls of John Takell and Jone hys wyffe." In the north aisle is the tomb of John and Joan Takell. The aisle roofs are of the usual West Country waggon type, with well-carved bosses. There is a peculiar transeptal arrangement of the roof in the centre of the nave. Four black oak ribs spring from the piers of the nave at the crossing. They meet just over the rood-screen. On the same are finely carved bosses.

By the north door is a black marble tomb of Thomas Marwood, "who practised physic 75 years, and died at the age of 105, physician to Queen Elizabeth." Marwood rose to this eminence by means of a cure which he wrought on the person of the Earl of Essex, for which service he was presented by Elizabeth with an estate near Honiton.

The great glory of Honiton church was the rood-screen, erected about 1480. It was of eleven bays or 46 ft. in length, crossing nave and aisles. The three pairs of gates, vaulting, and cornices were intact on both sides. The vaulting supported a loft about 6ft. wide. Each fan consisted of six panels with richly embossed tracery, having carved bosses at their points of intersection. Above the vaulting was an exquisitely carved cornice exhibiting the customary vine-leaf ornament. This consisted of three rows of delicate vignette enrichment with upper and lower cresting. The lower inverted cresting had alone suffered injury at some previous date. The lights, which were encircled by carved scroll enrichments, displayed, in their lovely tracery, between the cusping, small tilting shields; and the lower panels exhibited much fine tracery of varied design. The east side of the screen was not quite so elaborately carved. The whole screen was painted brown, the cornice alone being gilded. This rood-screen was undoubtedly the prototype of many other screens in the neighbourhood, and supplied the title "Honiton type" to other screens of similar character and detail. The screen was of exceptional merit both on account of the excellence of its carving and its perfect condition. The sanctuary was enclosed by two parclose screens of good Perpendicular type, similar to and of like date to the rood-screen.



ST. MICHAEL'S CHURCH, HONITON, DEVON.

The greater part of the stained glass in the large east window, the carved oak reredos, and the ornaments and plate of the altar, were happily saved. The fine modern font, of alabaster, polished granite, and marble, was split and broken into pieces by the heat.

The damage done has been estimated at £8,000. Thus has Devon been bereft of another of its glorious rood-screens.

The cause of the fire has not been definitely ascertained, so that it would be both futile and unfair to conjecture it. At the same time, it is to be hoped that no pains will be spared to determine the origin of the outbreak, in order that steps may be taken to preserve similar buildings from the sad fate which has overtaken so interesting a church as St. Michael's, Honiton, as well as—at rare but still too frequent intervals—many another noble monument of the art of the early builders. As many old churches are remote from fire-stations, it is only a

FIRE EXITS FROM FACTORIES.

The Public Works Committee of Birmingham City Council report that under the Factory and Workshop Act, 1901, provision is made for securing that every factory and workshop in which more than forty persons are employed shall be provided with such means of escape in cases of fire as can reasonably be required. Every District Council is also empowered, in addition to any powers which they possess with reference to the prevention of fire, to make by-laws providing for means of escape from fire in the case of any factory or workshop. The Inspector of Factories having called the attention of the committee to the desirability of such by-laws being made in the city, the committee have taken the matter into consideration, and recommend the Council suitable by-laws for adoption. As no doubt other committees will follow Birmingham's example, a summary of the provisions may prove useful as well as interesting.

verting the building for use as a factory or workshop, all stairs or steps required to be provided in pursuance of this by-law shall, together with the supports thereto, be of fire-resisting materials.

Every building to which the foregoing by-law applies, any floor or floors of which being more than thirty feet from the ground, is or are used for factory or workshop purposes, and in which either more than ten persons are employed, or rather inflammable materials or explosives are stored or used, shall, for every such floor, in addition to the stairs or steps required by these by-laws, be provided with means of escape in case of fire, by (1) an external staircase constructed of fire-resisting material; or (2) an efficient and suitable fire-escape; or (3) ready and safe means of access to the roof of the building, and where practicable to the roof of any adjoining building.

Every factory or workshop shall in every room in which persons are habitually employed be provided with at least one window or other means of exit from the building situated at an adequate and suitable distance from the doorway of such room, and where practicable at not less than half the length of such room. Such window or means of exit shall be constructed so as to open easily and to a sufficient extent, and in a suitable position for the easy passage of any person employed in the factory or workshop, and where in any such room there is any window or means of exit from the building not so constructed, the window or windows or means of exit that are so constructed shall be distinctly marked for the information of the persons employed.

The penalty clause imposes a fine of £5, and in case of a continuing offence a further penalty of 40s. for each day after the service of notice, the court, however, having jurisdiction to impose a smaller penalty if it thinks fit.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Science Museum at South Kensington.

Mr. Runciman has informed Mr. Wedgwood that he hopes to make an announcement shortly as to the commencement of new buildings for the Science Museum at South Kensington.

Housing and Town Planning Appeals.

Mr. Burns, replying to Mr. Cassel, stated that he had not invited any expression of opinion from local authorities as to whether they were in favour of appeals against orders under Part I. of the Housing and Town Planning Act being made to a judicial tribunal in substitution for the Local Government Board, nor did he consider it necessary to do so. He was aware that several London Borough Councils had made representations to the effect mentioned.

Road Board Grants.

In the House of Commons last Wednesday, Mr. G. Roberts asked the Secretary to the Treasury if it was the settled policy of the Road Board only to sanction schemes on condition that the local authority undertook to find a specified sum; if all local authorities had been notified to this effect; and whether, as the imposition of such conditions was calculated to frustrate the promotion of schemes, he would consider the advisability of abandoning this demand upon the local authorities.

Mr. Hobhouse: The grants which the Road Board have hitherto made towards the cost of proposed works of road improvement have taken the form of contributions to the estimated cost. The



CHANCEL SCREEN, HONITON CHURCH.

reasonable precaution—but one which, unhappily, is too often neglected—to install the apparatus of fire-extinction, and to drill an amateur brigade in the use of it. Further, such buildings should be periodically examined by an architect, preferably in company with a fire-prevention specialist, with a view to doing everything possible to prevent an outbreak. In particular, the old timber, which is often so dry as to invite ignition, might be treated with some non-flammable preparation which, while causing no disfigurement, might ensure almost complete immunity from combustion; and old flues, ill constructed, or fallen into disrepair, should not be tolerated, as they are perhaps the most prolific source of danger. Of course, in cathedrals, where there is an "architect to the fabric," he may be trusted to adopt—or at least to recommend—all possible means of protection; as has been done, for instance, at St. Paul's Cathedral, where the means of preventing and suppressing fire by internal outbreak or by possible contagion from any of the large buildings which too closely hem it in have been studied with the most anxious care. A conference on such matters should produce much valuable information and suggestion on points that at present are but little understood.

The proposals of the committee include the following—Every building of more than one storey which, or any part of which, is used as a factory or workshop, shall be provided with adequate stairs or steps, permanently fixed, which shall be constructed so as to be adequately lighted by natural or artificial means, and as to afford as direct and unimpeded access as practicable from every part of the factory or workshop to the ground floor of the building, and where practicable to an open space on the outside of the building or a public thoroughfare. All such stairs or steps shall be directly connected with landings, corridors, lobbies, or passages giving access to every part of the factory or workshop, and shall be provided with a suitable and sufficient handrail. Provided always that for a period of twelve months after the appointed day the foregoing requirements of this by-law shall not be deemed to apply in the case of a building used as a factory or workshop prior to the appointed day. In the case of any building constructed for use as a factory or workshop after the appointed day, and in the case of any building constructed for use otherwise than as a factory or workshop in which alterations affecting the form and structure of the premises are made after the appointed day for the purpose of con-



STEEL PARTITIONS AND DOOR IN BUSINESS PREMISES, LONDON, E.C.

Board find that local authorities generally are quite willing to proceed with their proposed works with the assistance of the grants.

STEEL INTERIOR FITTINGS.

We have repeatedly drawn attention to the desirability of substituting metal fittings for woodwork in order to render office and business premises as far as possible fireproof, and we now have pleasure in illustrating some further examples of work that is being done in this direction.

All fires have small beginnings, and by the elimination of wood the danger from fire is reduced to a minimum. The absurdity of placing a wooden door in a fire-proof wall is apparent, when it is possible to obtain a door which can be formed with fire-resisting material without presenting an obtrusive or unsightly appearance.

The accompanying illustrations show a few of the many installations that have been made by the Art Metal Construction Department of Roneo, Limited, and will be a revelation to many as to what can be obtained in the way of steel doors, counters, partitions, desks, letter files, and other fittings. All the work is enamelled in art colours, so that an artistic and harmonious effect is obtained. A special enamel is used, which will not crack or chip under the most severe use.

A large amount of this partition work is now being used in connection with the extension of the head office of the London City and Midland Bank, of which Mr. T. B. Whinney is the architect. This work includes a number of steel doors, and the enclosure of a light shaft extending through four floors.

The circular steel counter shown by the photograph on the opposite page is in one of the largest banks in Amsterdam, and indicates that the circular shape presents no difficulty.

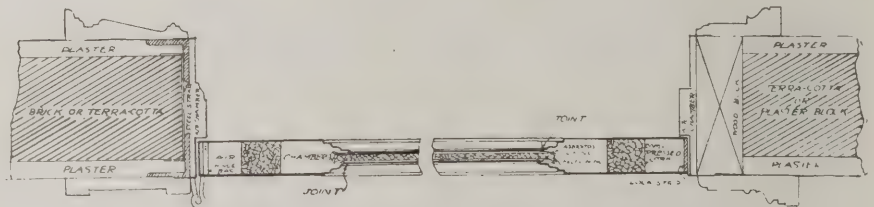
Another great advantage in the use of steel for this class of work is that it is not affected by climatic conditions. It never cracks or warps, and, being finished with three coats of well-baked japan, it needs no re-painting; consequently an economy is effected in this direction.

Perhaps the most difficult article to make in steel is the roll-top desk; but the difficulty has been entirely overcome. The curtain works smoothly, and the drawers can be withdrawn without the least effort, and with none of the sticking that is often experienced with wooden drawers on account of the dampness of our climate. In the construction of these drawers a light gauge of steel is used, but this is folded in such a manner as to give the necessary strength, and at the same time to keep down the weight.

For the fitting of strong rooms the great gain in space by the use of steel as compared with wood should lead to its universal adoption.

The Scottish Widows' Fund Insurance Society of Edinburgh recently took out the wooden fittings from one of their strong rooms, and had it refitted with steel devices, by which means they made a gain of 100 per cent. in capacity. It should be noted, however, that this gain was not due entirely to the difference in the thickness of the material from which the cases were constructed, but was partly consequent on the construction of the device for storing the documents and the improved method of filing.

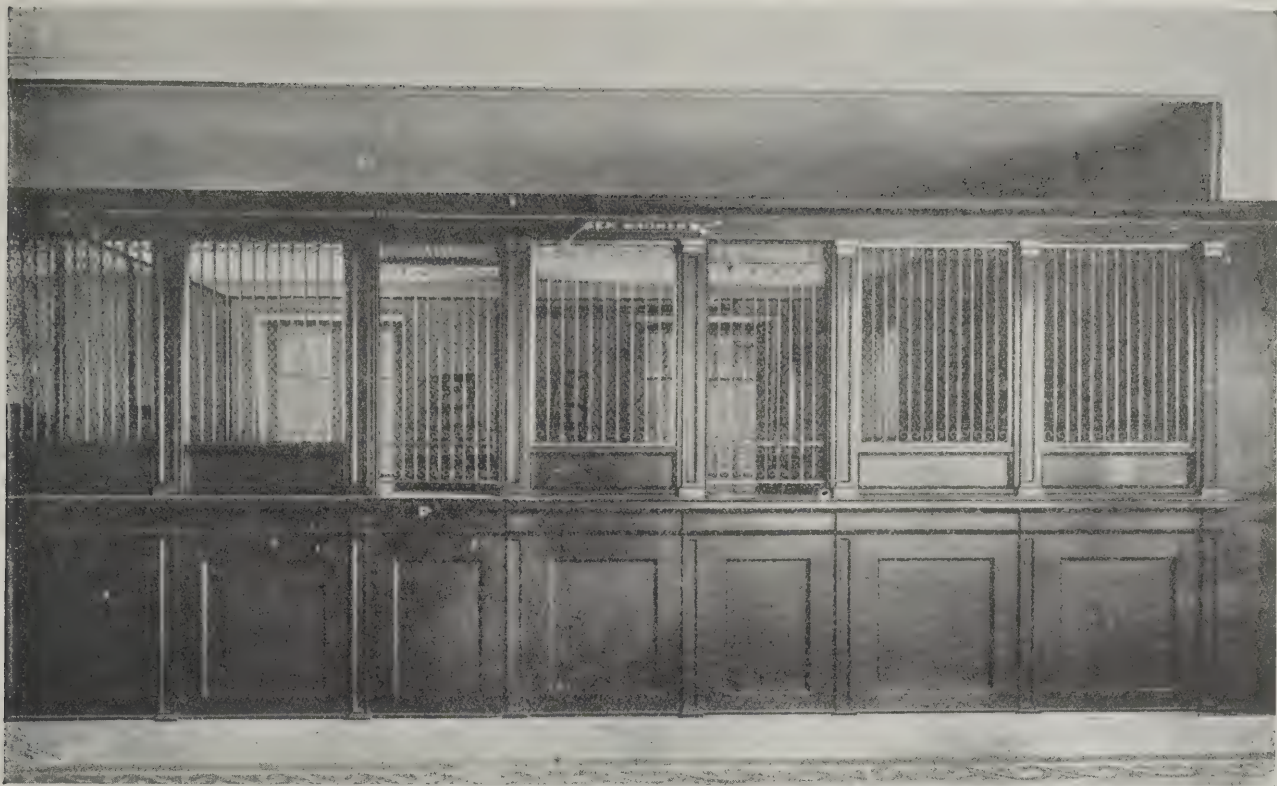
The Art Metal Construction, Roneo, Limited, 26, Holborn Viaduct, are pioneers in this work, and contemplate extensive additions to their factory at Romford, Essex.



SECTION OF STEEL DOOR, SHOWING CONSTRUCTION.



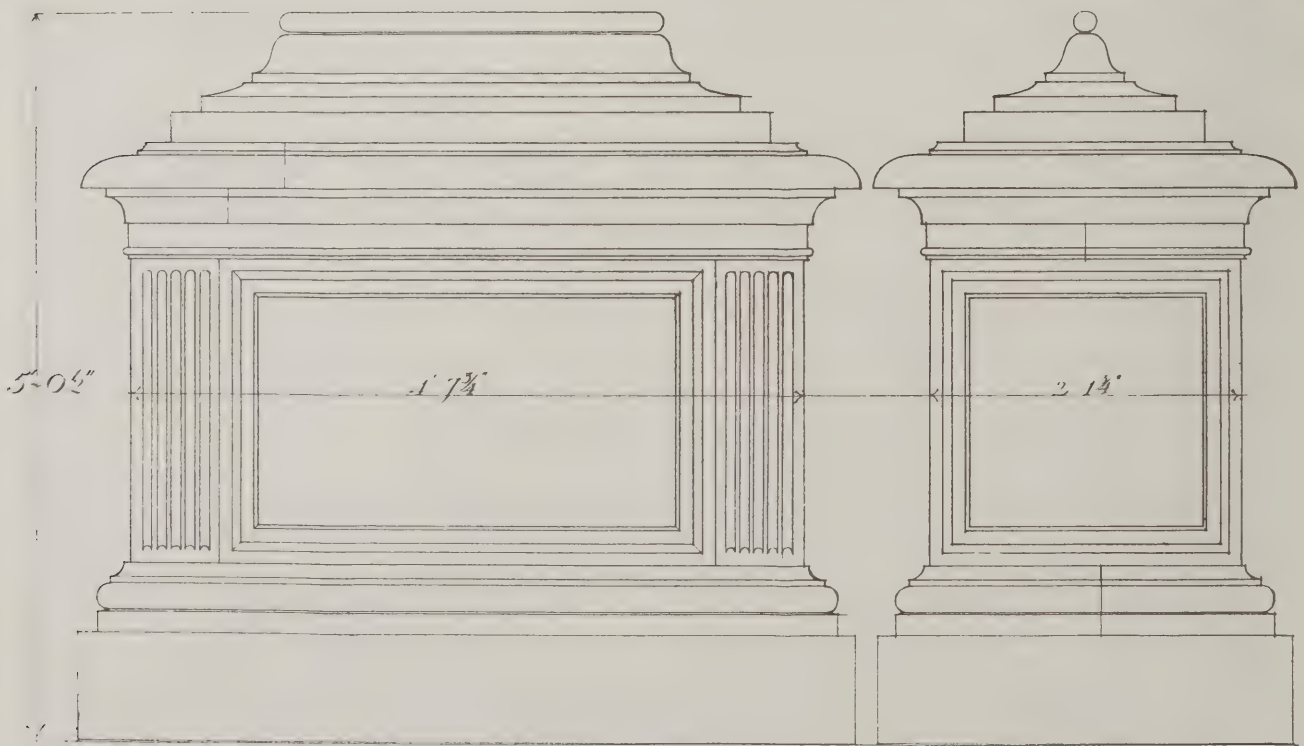
STEEL STAIRS IN THE LIBRARY BUILDING, ST. ANDREW'S UNIVERSITY.



INSURANCE OFFICE, PARIS, WITH STEEL COUNTER AND BRONZE GRILLES.



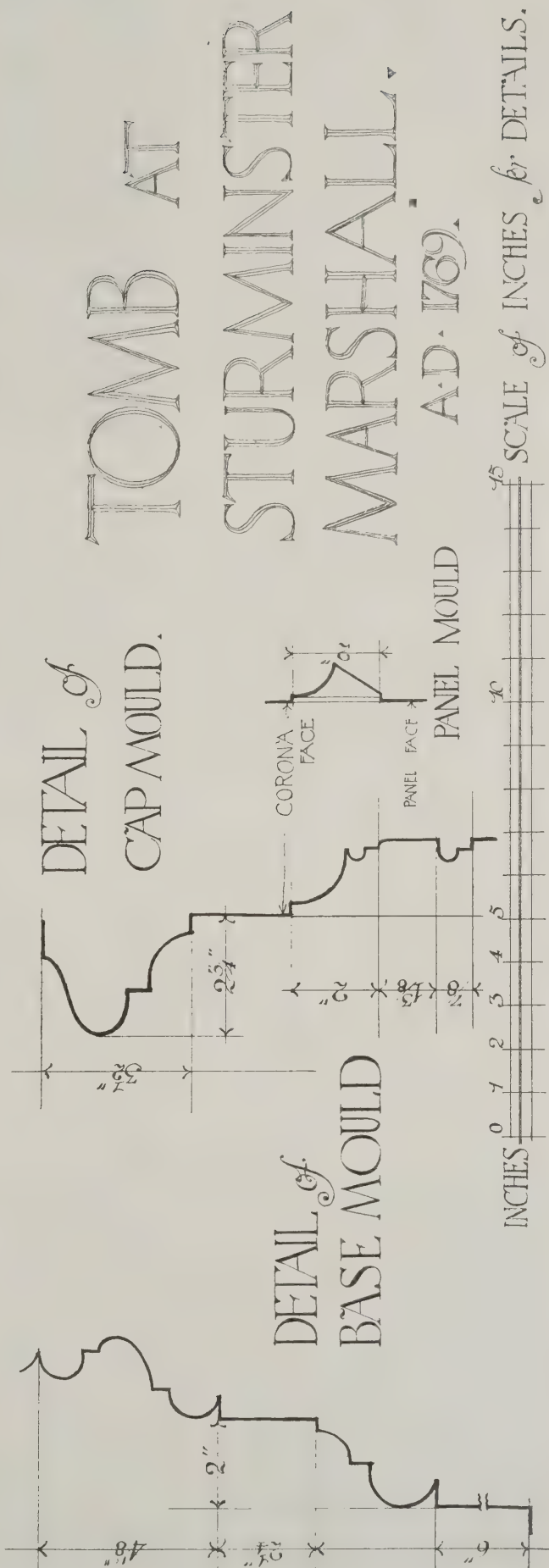
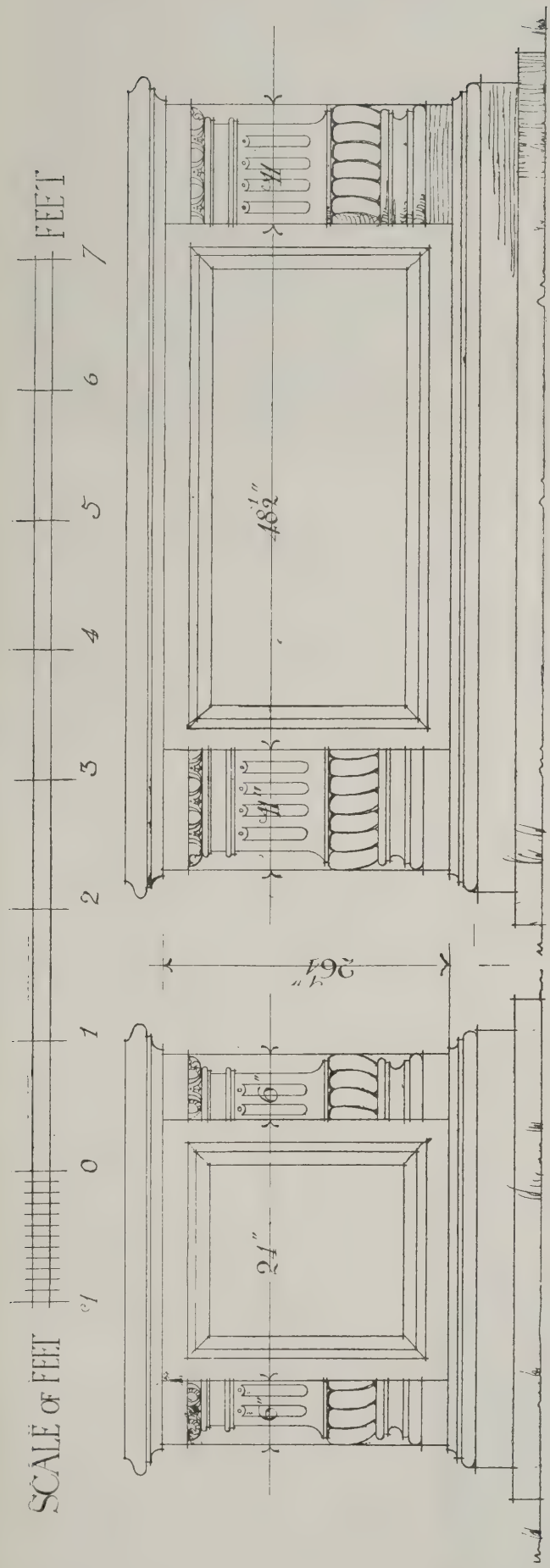
BANKING ROOM, AMSTERDAM, EQUIPPED ENTIRELY WITH STEEL FITTINGS—COUNTERS, DOORS, ETC.



THOMAS COOKE,
Gen^l Obit June the 30 1801,



TOMB IN WEST HANNEY CHURCHYARD, BERKS. MEASURED AND DRAWN BY J. M. W. HALLEY.



MEASURED AND DRAWN BY J. M. W. HALLEY.

DETAILS—OLD AND NEW.—IV.

The design of the tombs from West Hanney and Sturminster churchyards is that of an ancient sarcophagus. The latter is of an extremely common type, having been used all over the country with but slight variations during the eighteenth century. Probably the greater or lesser skill and taste of the village mason gave distinction or the reverse to these tombs, but they seldom fall below a fairly high standard, like most of the vernacular work of that century. In this particular tomb at Sturminster the scolloping at the angles is too crowded, and not cut with sufficient precision, otherwise it is perfectly typical. Its date is 1769. Nearly half a century later (1801) the West Hanney tomb is of a much rarer type—fluted pilasters taking the place of the moulded corners, and a finely moulded top or lid being added. Very often richly carved armorial bearings ornament the end panels of similar tombs, although the present examples are both plain, while the long panel invariably has an inscription. And it should be noticed that the lettering is always beautiful and legible. Beyond the usual "Obiit" or "Hic dormit," the idea of Death is not enforced by a gruesome charnel-house decoration of skull or other *memento mori* to insult the imagination. Quiet and seemingly memorials these: bleached by the sun and rain they stand like white milestones in the journey of life!

J. M. W. H.

SOCIETIES' MEETINGS.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

At the meeting of the Gloucestershire Architectural Association held on March 30th (Mr. Walter B. Wood, president, in the chair), Mr. Raymond Unwin, F.R.I.B.A., read a paper on "The City Development Plan." What led them to study this question so much, said Mr. Unwin, was that for the first time in the history of this country power had been given to towns to organise the development of their areas on lines that should be economically sound, which should lead to the health of the inhabitants and the efficiency of the industries carried on therein, and, he hoped, to a more beautiful appearance of the newer parts of towns



TOMB AT STURMINSTER MARSHALL, DORSETSHIRE.

than characterised the suburbs that had been built during the past fifty or hundred years.

Under the Town Planning Act power was also given to local authorities to limit the number of houses per acre. It was commonly thought that if they halved the number of houses allowable on an acre of land they would automatically double the cost of development per plot. He had gone very carefully into the matter, and had found that this was far from being the fact. Working on the assumption that the land was worth £300 an acre before development, and calculating the cost of roads at a reasonable amount, he found that where there were 20 houses to the acre the cost per plot of land and roads was £47 and the area was 172 yards to each plot, including the area of the house. That was equivalent to 5s. 5½d. which the tenant must pay (for purchase or in the form of rent) for every yard, which worked out at 8½d. per week. If they reduced the number of houses by half they would find that the price per plot had only risen to £68, or 1s. 0½d. per week, and that the price per yard had gone down to 3s. 2½d. Altogether, therefore, a man would have to pay only 4d. per week more ground rent for twice the area of ground, because the expenditure in the

case of ten houses per plot was so much less owing to the fewer roads and drains. By making some of the subsidiary roads, which would not be in constant use for heavy traffic, narrower and lighter than the main roads, even this difference in price could be almost, if not altogether, overcome and the enormous additional advantages obtained with practically no extra expense. No hardship was inflicted upon the landlord in halving the number of houses per acre, because twice the amount of land was raised from agricultural to building value. The lecturer went deeply into this question, illustrating his remarks by diagrams, plans, and photographs of the Hampstead buildings. He also showed views of English and Continental cities illustrating the artistic treatment of roads and streets, pointing out the value of a dominating feature to complete a vista. In making plans for the laying out of suburbs, he said, it was necessary to keep in mind a scheme for the whole town, because, though it might at that moment be impossible to tamper with the centre of the town, if they laid out the outskirts on a comprehensive plan it might be possible to bring the centre gradually into conformity as time went on.

LEICESTER SOCIETY OF ARCHITECTS.

The last meeting of the session of the Leicester and Leicestershire Society of Architects was held on March 31st, when an address on "Architectural Sketching" was given by Mr. B. J. Fletcher, and one on "The Planning of Domestic Buildings" by Mr. Shirley Harrison, A.R.I.B.A.

LIVERPOOL ARCHITECTURAL SOCIETY.

Officers for 1911-12.

The officers for the session 1911-1912 are as follows:—President, Arnold Thorneley, F.R.I.B.A.; vice-presidents, W. E. P. Hinde, A.R.I.B.A., and C. H. Reilly, M.A., A.R.I.B.A.; honorary secretaries, Gilbert Fraser, A.R.I.B.A., and Ernest C. Aldridge; unofficial members of the Council, W. Glen Dobie, A.R.I.B.A., J. Dod, T. E. Eccles, F.R.I.B.A., G. H. Grayson, M.A., A.R.I.B.A., L. Hobson, A.R.I.B.A., P. C. Thicknesse, F.R.I.B.A., W. E. Willink, M.A., F.R.I.B.A., L. P. Abercrombie, and F. E. G. Badger; honorary auditors, John Woolfall, F.R.I.B.A., and M. Honan, A.R.I.B.A.



TOMB AT STURMINSTER MARSHALL.

ENQUIRIES ANSWERED.

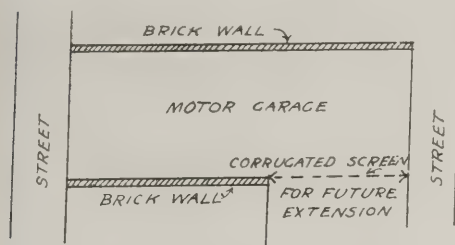
Contract Not Under Seal.

SEAL writes: "Kindly inform me whether a building or other agreement is legal when simply signed by one or more directors of a limited company, and not under Company's seal?"

—To prevent all possibility of repudiation, the agreement should certainly be under the company's seal.

Temporary Screen Wall.

ARCHITECT writes: "Please give the legal definition of a wall. I desire to build as shown on enclosed sketch, leaving the side open for future development, and temporarily closing it in with a corrugated iron screen. The local surveyor states that I must build a wall across or leave it open, he considering the screen



to be a wall, which must therefore be built to comply with the by-law setting out of what the wall shall be built."

—The Local Government Board's by-laws define an "external wall" to be "an outer wall of a building not being a party wall, even though adjoining to a wall of another building." There is no doubt that, interpreting the strict letter of the local by-laws, the surveyor is quite right in refusing to pass the proposed wall so far as it is to be constructed of corrugated iron; but this certainly appears to be a case in which the non-compliance with the by-law might reasonably be excused. I can only advise you to submit plans showing the screen space as open (or with corrugated-iron doors, if not too wide a space), build your garage accordingly, and afterwards add the corrugated iron screen as you suggest. Your building then has been built and approved, and you have a perfect right to add to a completed building something which requires no consent from the local sanitary authority. F.S.I.

Ambiguous Timber Specification.

T. R. (South Wales) writes: "I am clerk of works on an important job at present, and the specification for timber reads as follows: 'The timber for roofs, external doors, and windows to be selected Baltic red pine.' I take it that Baltic red pine means Russian timber. Should all this timber be hammer branded; and if stencilled in red, it is not Baltic red pine?"

—Your letter raises the question whether the clerk of works may use his discretion in interpreting the specification; and this largely depends upon his experience and the confidence reposed in him by the architect. From the looseness in which the particular clause is drawn, I should assume the architect desires him to exercise his discretion. Replying definitely to the questions, "Baltic red pine" should read "Baltic red deal," for these reasons:—(1) Although the wood desired is a pine, it is not so known in the trade. (2) If the word "fir" is used, it allows the substitution of baulk timber, which is not so suitable for the purposes specified as deal. (3) "Deal" means converted stuff,

and is selected for joinery work. To the second question, the term Baltic timber is not confined to that shipped from Russian ports, but is applied indiscriminately to any timber shipped from ports in the Baltic Sea. If Russian timber is required, it is better to specify the port, as St. Petersburg or Archangel, etc. Timber bearing any of the brands specified in your letter will be Baltic timber, but it would be wiser to select or reject the timber according to its quality and suitability for the purposes required, than for the brands upon it, which may possibly be misleading.

G. E.

Cleaning Terra-Cotta.

SUBSCRIBER (Birmingham) writes: "Kindly recommend some suitable chemical preparation, soap or powder, for cleaning terra-cotta."

—We are not acquainted with any specific preparation that is particularly adapted to cleaning terra-cotta; but probably Hudson's soap, or some similar cleansing agent, would prove effective.

Liability for Defective Sewer.

SURVEYOR writes: "The basement kitchens and sculleries, etc., of several houses were recently flooded by a back flow of sewage, owing to the blockage of the public sewer. The blockage occurred in a length of sewer laid under a road not under the control of, nor repairable by, the local authority, and was caused by the sewer being broken in presumably by the heavy building traffic above. The damage to the landlord's property has been made good by the Council's servants, but there appears to be some question as to whether the tenants, who naturally suffered considerable damage and inconvenience, are legally entitled to compensation. It may be argued that the damage suffered by the tenants was not the result of negligence on the part of the Council or their servants, and therefore they are not liable."

—I do not think the fact that the block occurred upon land not under the control of the sanitary authority affects the case at all, because the sewer itself was certainly under the control of that authority. It is rather an open question as to whether the local authority is liable for the damage caused by the blocking of the sewer—a block which they admittedly remedied as soon as it was brought to their notice, but I am nevertheless of opinion that it is the duty of the sanitary authority, under Sections 15 and 19 of the Public Health Act, 1875, to keep all its drains in order, and so as not to be a nuisance. The case appears to be governed by the decision of the Court of Appeal in "Baron v. Portslade Urban District Council" L.R. (1900), 2, Q.B., 588, where the District Council is liable for the damage occasioned by its neglect to keep the sewer in proper order. F.S.I.

Canadian Builders' Price Book.

TEN YEARS' READER (Durham) writes: "Please inform me whether there are any Canadian builders' price books published. If you know of any books that would be of assistance to a builder about to commence business in Canada, please name them."

—We do not know of any Canadian builders' price book, and we very much doubt whether such a thing exists. Nor are we acquainted with any books that would be of assistance to a builder about to commence business in Canada. Our correspondent should write to the secretary of the Master Builders' Association in such towns as Montreal and Toronto,

who would doubtless be glad to supply him with all information desired.

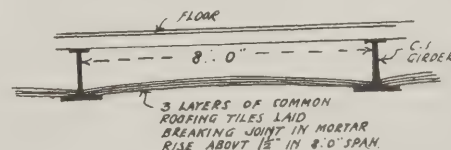
Post of War Department Surveyor.

With reference to the enquiry published under the above heading in our issue for March 22nd, a correspondent (P.J.W.) kindly writes to say that there has been no examination for this post now for over ten years, but he believes it is still shown on the list of the Civil Service Commissioners. The appointment was practically abolished two years ago, when all district surveyors then serving were made inspectors of works, with honorary military rank. In future it is understood that all men employed under this head will be recruited from selected non-commissioned officers of the Royal Engineers, who have passed through the necessary training at the School of Military Engineering.

Wanted, a Heat-proof Floor.

Further correspondence has been received with respect to the enquiry published under the above heading in our issue for March 15th. The Armoured Tubular Flooring Co., Ltd., of 53, Victoria Street, Westminster, write: "Our flooring holds the highest official qualification in heat resistance, having gained the 'Full Protection' Certificate of the British Fire Prevention Committee. Its hollow construction adds to its heat-insulating properties."

A contributor also writes: "In one instance which came within my knowledge, insulation from heat was successfully accomplished by forming a ceiling to the bakehouse with ordinary plain tiles set in a Guastavino arch between deep girders, as sketch. This makes a very strong and



effective arrangement. In the instance I mention (about 80 years old) the deep girders were of cast iron, their bottom flanges being exposed, and the cavity filled with rough concrete; but I should think a distinct improvement would be to encase the lower flanges of an ordinary steel girder with porous terra-cotta, and to cross-ventilate the cavity well; or, if this is inconvenient, to fill it with slag wool. The soffit of the tiles can have a skimming coat of plaster or be simply whitened."

Concrete Walls.

C. S. (Plymouth) writes: "I am intending to build *in situ* concrete walls to a bungalow at the seaside, and shall be glad of any information upon the subject. The walls are afterwards to be covered with rough-cast."

Concrete walls should be laid in courses of from 6in. to 12in, the upper surface of each course being left rough to form a key for the succeeding course. The concrete should be well worked with a trowel at the sides of the casing, so as to produce a compact face when the framing is removed. The timber framing, which must be strongly secured to prevent sagging under the weight of the concrete, should be well wetted before the concrete is put in. The ordinary kind of battened framing should prove quite suitable if a strong solution of soft soap is used to prevent the concrete from adhering to it. The face of the concrete should of course be left uneven to take the rough-cast.

NEWS ITEMS.

Bruce-Joy Statue for Blackburn.

Mr. Bruce-Joy has received the commission to make the colossal bronze statue of the late Mr. Hornby for Blackburn.

* * *

Rochford Workhouse Additions.

Mr. Walter J. Wood, architect, 26, Alexandra Street, Southend, has been selected by the Rochford (Essex) Board of Guardians to advise them as to the proposed extensive additions to their workhouse.

* * *

The Coatstone Decoration Co.

The Coatstone Decoration Co., of 77, Mortimer Street, Regent Street, W., have been awarded the Grand Prix and Gold Medal for "Coatstone" liquid stone decoration at this year's International Exhibition, Paris, held in March.

* * *

Quebec Bridge Contract Awarded.

The contract for the construction of the Quebec Bridge has been awarded to the St. Lawrence Bridge Company, of Montreal, on its own design. The main structure will be for railway purposes, but there will also be two 4ft. walks for pedestrians. The estimated cost is £1,730,000.

* * *

A. A. Sketch Book Prize.

The Herbert Batsford prize of five guineas, given annually by Mr. Herbert Batsford for the best drawing published in the Sketch Book, has been awarded to Mr. J. M. Whitelaw for his elevation, plans, details, and mouldings (half a dozen plates in all) of the Wellington Monument in St. Paul's.

* * *

R.I.B.A. Papers.

The reading of the paper on "Coloured Relief in Decoration," by Mr. R. Anning Bell, at the Royal Institute of British Architects, has been postponed from April 10th to May 22nd, and Mr. Lawrence Weaver's paper on "The Interleaved Heirloom Copy of the Parentalia, and some Notes on the Wrens," will be read on June 26th, following the presentation of the Royal Gold Medal.

* * *

Liverpool Royal Infirmary.

The new department for out-patients erected at the Liverpool Royal Infirmary at a cost of £30,000 has just been opened. The architect was Mr. J. Francis Doyle, F.R.I.B.A., of Liverpool. At the opening ceremony Sir Henry Burdett said he was glad to see added to the infirmary this out-patients' department, with its central hall, which was a unit he had advocated for forty years, and which was now adopted for hospitals all over the world.

* * *

Nottingham Architects and the Guardians.

At a meeting of the Nottingham Board of Guardians on March 28th the clerk reported that as requested by the Board he had communicated with the Nottingham Architectural Society with reference to the plans of the proposed new home for children in Edwards Lane. He informed Mr. Robt. Evans, jun., president of the society, that the Guardians did not wish to incur any further liability than the fee of 50 guineas to the consulting architect, in the event of the Board not desiring to continue the scheme. The Architectural Society thought that the matter could be better explained in a personal interview with the Building Committee, and had

appointed three of its members to do so, if the Guardians agreed. The Board considered, however, that nothing was to be gained by an interview with the committee, but requested the clerk to meet the representatives of the Society.

* * *

Stands outside the Abbey.

The triangle of green turf which runs alongside Westminster Abbey to the west of St. Margaret's Church is rapidly being transformed in order to accommodate stands for the Coronation. Trenches about three or four inches deep and twelve inches wide are being cut, and in these are being laid baulks of timber about twelve inches square. The baulks will form the base on which the staging and platform will be erected.

* * *

Proposed Sanatorium near Bradford.

A scheme for the erection of a sanatorium at Grassington, near Bradford, has been submitted to the Corporation by Mr. W. Williamson, the City Architect. It provides for fifty beds at a cost of £16,500. An alternative proposal for sixty-six beds, at an outlay of £17,680, is also receiving consideration. On plan, the buildings are arranged in the form of a crescent, facing south, the site being at an altitude of 800 ft. above sea level.

* * *

British Pictures in Rome.

Signor Arturo Calza, the art critic of the "Giornale d'Italia," commenting on the British Section of the Fine Arts Exhibition, remarks that "Great Britain, with all the art treasures of her golden age, has entered the arena as a formidable competitor, stripping her richest public and private galleries of their greatest masterpieces to do homage to Rome. This British show is a feast of beauty which of itself alone would suffice to ensure the success of the Exhibition."

* * *

New Dock for Montreal.

A contract has been entered into between the Canadian Government and the Montreal Harbour Commissioners with Messrs. Vickers, Son, and Maxim for the construction, working, and control of a floating dry dock with a lifting capacity of 27,500 tons, to be erected at Longue Pointe, at the east end of Montreal Harbour. Messrs. Vickers, Son, and Maxim undertake to have the dock delivered in Montreal in May, 1912, by which date the Harbour Commissioners are to have the basin ready for it. Messrs. Vickers, Son, and Maxim also agree to erect ship-repairing plant, as well as a plant for the manufacture of steel railway tires, on the site allotted to them by the Commissioners.

* * *

The Lötschberg Tunnel Pierced.

The Lötschberg Tunnel was actually pierced at 2 o'clock on Friday morning, March 31st, but the hole being covered with debris until after the final blasting was not noticed till 3.50, when one of the workmen found that he was boring through it. The piercing occurred at 7.350km. on the north side and at 7.186km. on the south side. In all 2,532.5 working days were necessary for the complete boring of the tunnel—1,162 on the north side and 1,370.5 on the south side. So exact were the calculations that there was found to be a difference of only 50cm. between the estimated and the actual length of the tunnel from portal to portal, 100m. in the height, and 32cm. in the axis. Considering that the Lötschberg is the only great tunnel with a curved course, this result is

looked upon as remarkably satisfactory. It now appears probable that the extra expenditure involved by the lengthening of the tunnel consequent on the disaster of July, 1908, will be much nearer £120,000 than the £80,000 originally estimated.

* * *

Mr. Frederick Daniel Hardy.

The death of Mr. Frederick Daniel Hardy, the painter, at the age of eighty-five, has taken place at Cranbrook. Mr. Hardy first exhibited at the Royal Academy in 1859, and for forty years was a regular exhibitor. Among his pictures were "The Sweep," "The Broken Window," "Reading the Will," "The Leaky Roof," and "The Threatened Deluge."

* * *

Builder Heavily Fined.

At Lambeth last week, Mr. J. J. Tully, a builder, who did not answer to the summons, was summoned before Mr. Hopkins to answer the complaint of Mr. Percy Hunter, district surveyor, with regard to buildings which he (defendant) is erecting at Belmore Street, South Lambeth. In February Mr. Hunter, proceeding under the provisions of the London Building Act, summoned the defendant for failing to comply with a notice of irregularity which had been served upon him, and the magistrate then made an order requiring the defendant to amend the work of which complaint was made. Mr. W. H. Rogers, assistant to the district surveyor, stated that he had visited the buildings that morning, and found that the order of the Court had not been complied with. Mr. Hunter pointed out to his worship that the defendant had rendered himself liable to a penalty of £20 a day. Mr. Hopkins said the defendant would have to pay a daily penalty of 40s. for 22 days, with 20s. costs.

FACTORY UPKEEP.

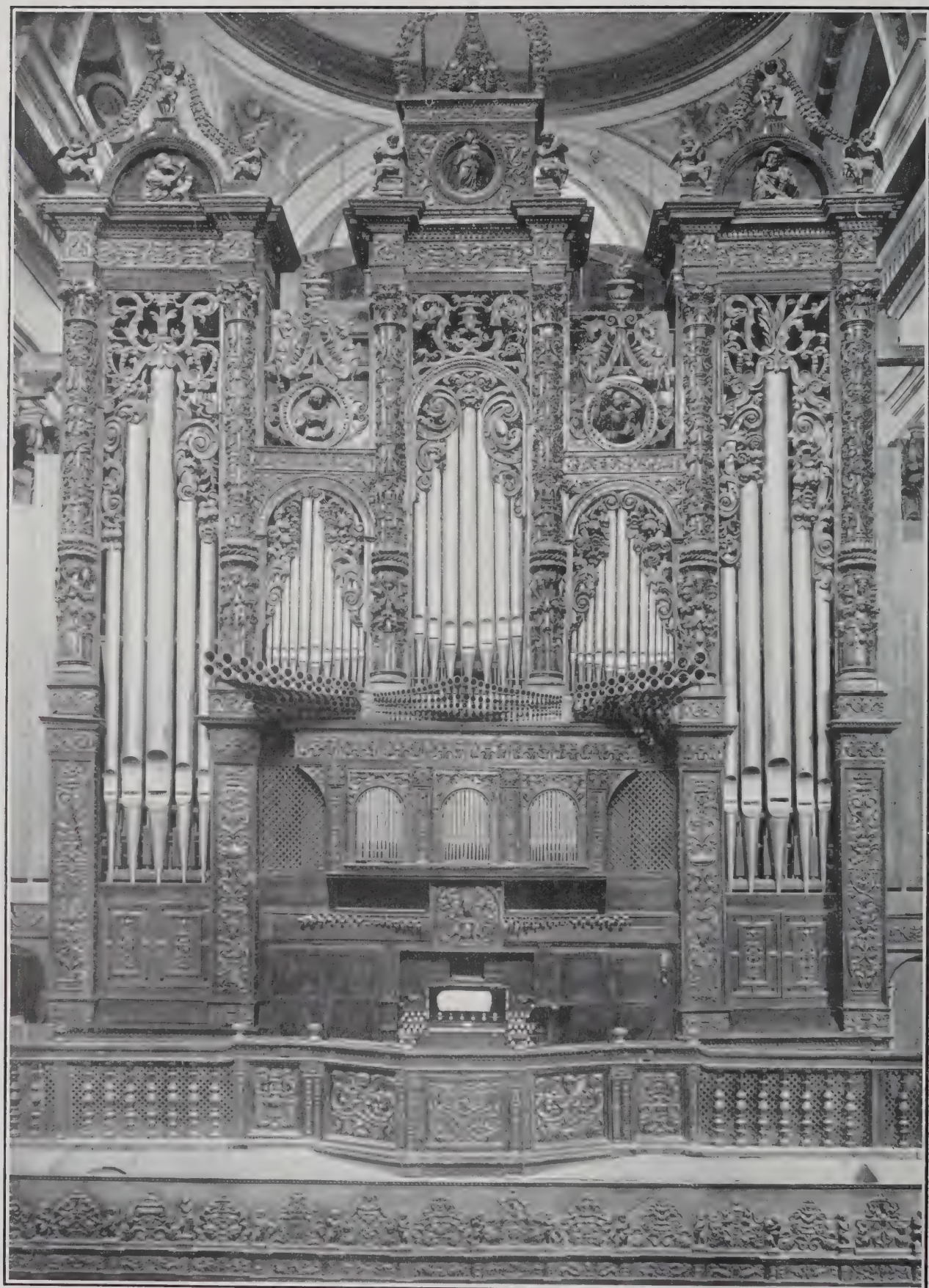
Special Exemptions where Washable Paint is Used.

An official order has been issued from the Home Office exempting factories from the requirements of the Factory and Workshop Act, 1901, with regard to lime-washing when such factories have been painted with at least two coats of a washable water paint, and are repainted with at least one coat of such paint once in every three years; provided—(1) that the paint shall be washed at least once in every fourteen months; (2) that the name of the paint used and the name and address of the makers, together with a certificate, and the date of the original painting and of each washing and repainting, shall be entered in or attached to the General Register; (3) that nothing in this order shall be taken to affect the obligation of keeping the factory in a cleanly state; (4) that if it appear to an inspector that any part of a factory to which the exception applies is not in a cleanly state, he may, by written notice, require the occupier to limewash, wash or paint the same; and in the event of the occupier failing to comply with such requisition within two months from the date of the notice, the special exception shall cease to apply to such part of a factory.

A washable water paint is defined as one which when finished for use contains—

(i) at least half its weight of solid pigment containing not less than 25 parts by weight of zinc sulphide as zinc white (lithopone) in each 100 parts by weight of solid pigment; and

(ii) at least 10 parts by weight of oil and varnish to each 100 parts by weight of solid pigment.



ORGAN IN THE CATHEDRAL, SARAGOSSA, SPAIN.



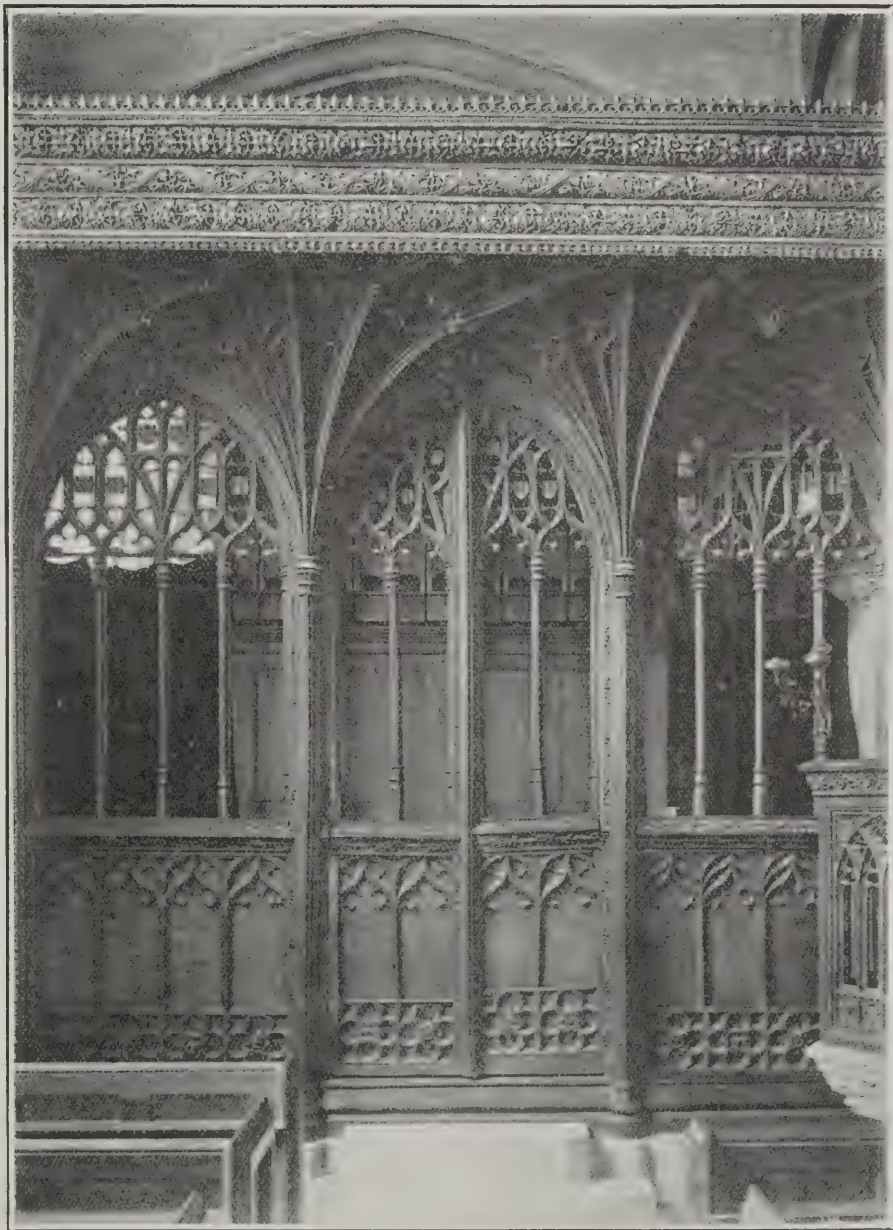
THE GREAT ORGAN AT HAARLEM, HOLLAND.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 19th, 1911.

Volume XXXIII.

No. 847.



DETAIL OF CHANCEL SCREEN, HONITON CHURCH, DEVON.

This fine screen, dating from the latter part of the fifteenth century, was consumed in the fire that destroyed the church on March 26th. Some descriptive particulars, and further illustrations, were given in our issue for last week.



THE LOGGIA, VILLA PAPA GIULIO, ROME. VIGNOLA, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

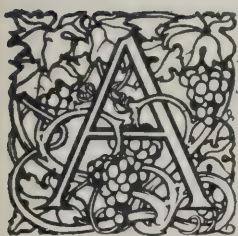
APRIL 12th, 1911.

CAXTON HOUSE, WESTMINSTER.

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NOTE: The List of Contents will be found on page IV. of the front advertisements. 8

The Organ in Architecture.



LARGE organ is an erection of such size and importance in a building that it may be regarded as a part of the architectural design of the interior, with which it should be in keeping in an architectural sense. In this respect the consideration of its design comes within the natural province of the architect. But it should be a con-

sideration for the architect. in a practical sense. also, for in order to do justice to an instrument and give it the best chance of having its full effect, it is necessary that it should be well placed and should have ample space provided for it. In this latter respect most architects have very inadequate ideas as to the space required, and competition designs for concert halls almost always show too cramped a space for the organ, besides often placing it in a manner detrimental to its effect in other respects.

In regard to space there are three reasons why this should be more liberal than is usually provided. In the first place comes the question of effect. An organ never sounds so well as when it has plenty of open space round it. That is the reason why the old position in cathedrals—on the top of the choir screen—was so favourable to their effect. The increased size of modern organs (in England—for in Germany some of the old organs are among the largest in the world) has led in many cases to the organ being removed, sometimes unavoidably, from the choir screen to a side position, but always with detriment to its effect. Where it cannot be retained on the choir screen, perhaps the best thing is to make a special erection of it at the opening of the transept, as has been done at Chester. The instrument can then all be concentrated on one site, and with space on each side of it. To place it in the triforium, as has been done in one instance, its front showing through two or three of the bays, is very bad in a musical sense; the instrument is boxed up and cannot be properly heard below; moreover, its architectural effect as a complete erection is lost. At Worcester, in order to enlarge the organ and yet retain its apparent position on the choir screen, the curious method has been adopted of placing the pipes of additional stops in the adjacent choir aisles, a treatment which naturally deprives it of combined and homogeneous effect. In connection with this question of effect, the "organ chamber" adjoining the chancel, which used to be so much adopted in ordinary churches, is as bad as it could well be, and should never be adopted for any but a small organ intended only to accompany the choir; in that case it may do.

Secondly, there is the practical necessity of having plenty of space inside an organ, and not cramming the pipes too closely together, for two reasons: (1) That the pipes, when too much crowded, interfere with each other's sound; (2) that in order to keep a large organ in proper order, and free from dust and dirt (which are most detrimental to it), it is essential that there should be plenty of space and gangways for the tuners to get easily to every part of the instrument. As an organ-builder observed: "A large organ is a very difficult thing to fight against"; it requires constant attention in every

part; and if it is so cramped internally that every part cannot be got at without displacing some of the pipes, the result will be that it will not be kept in proper condition. On one occasion the great German organ-builder, Schulze, after his specification and estimate for an English church organ had been accepted, on seeing what he considered the inadequate space allowed for it, absolutely refused to build the organ, saying that he could do his work no justice. Schulze looked on his work from the point of view of an artist, and preferred to lose money rather than not do himself credit.

The third reason for which ample space is desirable is the necessity, for getting the best result, of having the bellows of large capacity. No fault is so common in English organs, church organs especially, as deficiency of wind. Messrs. Lewis, in their recently published work on "Modern Organ Building,"* give it as a rule that "a fair average amount to allow, when calculating the size of any bellows, is from two to three feet superficial area for each stop throughout the instrument"; *i.e.*, the area of the top surface of the receiver. There must be very few organs in England with bellows of that proportional capacity. But it is very important; nothing can be worse in an organ than to be short of wind.

All these considerations as to space ought to be fully taken into account by architects in planning a concert-hall in which a large organ is to be built. And it is no use endeavouring to make up the space by building out a recess in the rear for part of the organ. All organs must be *in* the hall, not packed into recesses which are practically outside of it. All such devices mean loss of power and loss of effect.

It is impossible to treat an organ architecturally without some kind of screen or case, which conceals its natural irregularities. The pipes, in any stop which is shown visibly in front, must necessarily be of unequal lengths, and have a ragged appearance, a defect which is much more apparent in a large organ than in a small one. Provided that this screening of the irregular heights is attended to, nothing is finer in effect, or more suitable to the character of the instrument, than placing some of the larger pipes in towers and other arrangements as part of the design of the front. It must be remembered, however, in doing this, that the pipes so used have to be removed from their normal sounding position on the wind-chest, the wind being conveyed to the foot of each pipe by a separate metal flue from the pipe's natural position on the wind-chest to its artificial position on the front of the case. It is important to have these pipes conveying the wind to them as short as possible, otherwise they might not speak quite promptly; and therefore the proper position for the largest front pipes is at each side of the organ-front, and not in the centre. For on the wind-chest the pipes do not stand in the order of sounding, the bass ones on the left, and the treble ones in diminishing size towards the right, as in that case the large pipes at one end would tend to rob the wind from the small ones at the other end. So the pipes are divided between the two extremities of the wind-chest, the large ones at each end, diminishing each way to the small ones in the middle; so that the bass pipes begin at one end (generally the left)—C, D, E, and so

*"Modern Organ Building," being a practical explanation and description of the whole art of organ construction. By Walter and Thomas Lewis, organ builders. London: William Reeves; 1911.

on, and those at the other end begin—C sharp, D sharp, F, etc. That is why the right way of designing the case is to have the principal masses at each end, and not in the centre; it is both practically more convenient, and it is a correct expression of the interior arrangement; a point which every architect will appreciate.

In treating the case as a design, there seem to be two main principles which may be employed. One is to give the case a distinctly architectural and built-up character; the other is to treat the front rather as a decorative screen, which conceals the main part of the interior, allowing some of the principal pipes to occupy what would be otherwise gaps in the decorative screen. The two methods are very well represented in the two fine organ-cases which we illustrate this week, both of late Renaissance date. The Haarlem organ, one of the most celebrated of the old German organs, is distinctly architectural in character; the groups of large front pipes take the form of architectural towers with sculptured finials. This case shows also the charming effect produced by what used to be the favourite method in Germany, of treating the pipes of the lightest section of the instrument, called in England the "choir organ," and in Germany the "Positiv" or "Positif," as a separate miniature organ, in front of the main mass of the instrument, making a graceful incident in the design, and assisting in giving scale to it. The organ of Saragossa Cathedral, it will be seen from the centre plate in the present issue, is much less architectural in character, more in the manner of a flat open-work screen, crowned by a cornice. The detail is rich and beautiful to a degree, but on the whole the Haarlem organ is the grander and more striking erection. No use is made in either of the square wooden pipes, which are indeed very seldom introduced into the front design; but something might be made of them by way of contrast. Cockerell, in the great organ at St. George's Hall, Liverpool (unquestionably the finest design of a large organ case in England) made a fine use of the great wooden pedal pipes by carrying some of them round in a semicircle at the back of the centre portion of the case, where they just show above the lower portions of the front.

In England we have no such grand examples of old work as in the Haarlem organ, since organs on so large a scale were never built in this country till about half a century ago; but the small old organ-cases in some of the City churches, and some which have been erected in country churches during the eighteenth century, are admirable in design and taste.

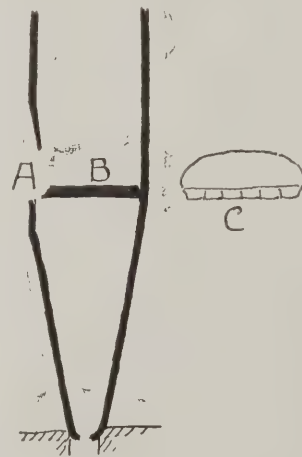
The position of the organ in modern churches is a difficult one. The size of organs has increased very much in this country of late, and with reason, as our old church organs were lamentably deficient, compared with the German ones, in pedal pipes, which form the bass of the whole instrument, and which are necessarily the largest, and take up more room than any others. Such large organs are not necessary, it is true, for accompanying the singing of the choir, and some architects and clergymen have been protesting against them of late years as unnecessary, and an interference with the architecture of the church; but they forget that there is congregational hymnody also to be considered, and to accompany that with any effect a large organ is absolutely necessary; congregations, when they sing the hymns, all sing in unison, not in harmony; the organ is necessary to supply the harmony, and a small organ is perfectly futile for such a purpose. The ideal arrangement would be to have a small organ in the chancel to accompany the choir (when they alone are singing), and a large one in the west gallery to accompany the congregation, played by electric action from the keyboard in the choir; but that of course is expensive. Failing that, the best thing would be to have the organ in the transept, when there is one; or otherwise, in the eastern bay of the nave: anywhere except in a low and confined "organ chamber," a position which is perfectly cruel to an organ. The bracketting of the organ high up on the wall may be done, but it is difficult to provide for a large organ in that way, nor is it good for the effect to have the organ very high up.

The book by Messrs. Lewis, to which reference has been made, is a good one as far as it goes, but it might be more suitably entitled, "Modern Organ Mechanism," as it is chiefly employed in describing and illustrating modern forms of organ action by pneumatic mechanism, and does not give very much idea of what the organ is, or should be, as a finished product of art, either architectural or musical; the one illustration of an organ-case, which forms the frontispiece, is a very poor affair, which would have been better omitted. But to those of a mechanical turn of mind there is a great deal of interest in the mechanism of the modern organ, which is very largely illustrated by carefully drawn sections and diagrams. As to one subject, the means of mechanical blowing, we notice that the authors recommend water-power as by far the best; the most silent, and the one requiring the least looking after. The manner in which the sound of a pipe is produced is rather vaguely and unsatisfactorily described in the following sentence:—

"The air under pressure enters the foot of the pipe, issues in a thin sheet, and is projected against the edge of the upper lip. Of the pulses and flutterings here set up the pipe raises some by its resonance to a continuous musical sound."

It is not the resonance of the pipe that does it; it is the column of air within the pipe; the only function of the pipe is to contain and define a column of air of a certain definite length. The better way to state it would be that the blast of air at the mouth of the pipe sets the column of air in the pipe in vibration, and that the rate of its vibration, and consequently the pitch of the note, is determined by the length of the column of air in the pipe, which moves in slower or quicker waves according to its length. It is curious that in this, as in other technical treatises, we find terms used as if every one understood them, which require explanation for the general reader. We are told that the voicing of a pipe partly depends on its "nicking," but we are nowhere told what "nicking" is, or where it is applied. It is one of the curious and inexplicable things about organ sound.

Take this diagram as representing the section of the foot of a pipe, the wind passes in at A "in a thin sheet," as already described, through the narrow space between the lower and the front edge of the "language" or "languid," B. The edge of the languid, as will be seen, is bevelled, but before the pipe can give its proper tone, a series of nicks (C) has to be cut on that bevel, and that is what the "nicking" means. No one seems to know why that is; there is, as far as we are aware, no theory about it; it is a curious example of one of those secrets of manipulation which were discovered by the experience of some craftsman long ago; just as in violin-making, no one knows any reason for the special shape of the violin, or the position of the *f* holes or of the sound-post, but no alteration from them can be made without detriment. These are the kind of details which are discovered by practical craftsmen in the process of making, without their being probably able to give any reason for it, except that they found it was so.



The moral of our article, however, is that architects who are concerned with buildings in which organs are to be erected, would do well to get reliable information as to what is really required in the way of practical provision for the instrument, as well as endeavouring to render its outward aspect a work of architectural art, which will give additional effect to the building which contains it. There are few objects more suggestive for design than an organ-case, and the possible forms of its artistic treatment are by no means exhausted.

Creeper-covered Buildings.

THERE are no doubt some few of the nature-lovers among architects who admire ivy-clad buildings; but there are probably many more who would rather dispense with this meretricious aid to picturesqueness. Even among archaeologists there are those who wage war against it because they know it to be not merely the accompaniment but the actual and potent cause of ruin to the walls to which it clings. That learned and indefatigable student of old churches, and all that pertains to them, the Rev. J. Charles Cox, has upon several occasions complained of the grievous destruction of highly interesting old churches "by the rampant growth of ivy, which has been deliberately encouraged from a false idea of picturesque beauty," and he returns to the charge with redoubled vigour in a recent issue of the "Athenæum." As a specific instance, he mentions the tower and spire of Great Baddow Church, near Chelmsford, which "is chiefly remarkable for the excellent early sixteenth-century brickwork of the upper parts and battlements of the aisles and nave, and also of the south porch. Much of the rest of the church, including a good western tower, is of fourteenth-century date; but there is some older rubble walling with Roman tiles. The tower is crowned with a graceful lead-covered timber spire of considerable elevation." About four years ago Mr. Cox, noticing the great masses of ivy with which much of the tower was burdened right up to the battlements, ventured to suggest that the parasite should be removed. In reply he was told, "Oh! Baddow people would never hear of that; we think the ivy by far the most picturesque thing about our old church." It is now found that the upper parts of the tower have been so much damaged by the ivy that they will require renewal or rebuilding for several feet. Many other churches in Essex are, he declares, "in jeopardy through the reckless encouragement of this devastating parasite." As at Baddow, so universally ivy is venerated, and almost worshipped, to a greater extent than the fabric it covers. It makes an irresistible appeal, partly because its greenery is gratifying and restful to the eye, and partly because of its immemorial poetic and picturesque associations. We have here, therefore, one of the innumerable instances in which the emotionalists are opposed to the intellectualists. The vast majority of people belong to the former class, who admire an object simply because they think it looks pretty, or because it recalls tender memories. Obviously, it requires a rather stronger and sterner mind to resist—at the behest of reason, or on a rational consideration of the fitness of things—these softly sentimental influences. As a matter of plain common sense, if ivy is destructive to buildings, it ought never to be allowed to touch them. Nor is it in accordance with the fitness of things that the carefully wrought handiwork of man should be concealed, even where it is not destroyed, by a rank overgrowth of ivy or other creeping plant. The taste, in fact, for ivy-covered buildings is as false as it is mischievous. It will not stand the test of reason; and those who, taking their æsthetics rationally, are able to reflect how much of obliteration and decay are connoted by the "ivy-mantled tower" will not be able greatly to admire it.

The "Oldest Building in Britain."

THE "oldest building in Britain" is, it would almost appear, in several places, a newspaper correspondence on the subject having brought out rival claims. One correspondent enlarges on the scope of the enquiry with the nevertheless popularly useful statement that "very little work of the Romans is left, but the best examples of their masonry are to be found in the castle of Burgh (Suffolk) and Richborough (Kent)." The same correspondent adds that, while it is impossible to find cathedrals in this land without additions and alterations made during the various periods of Gothic architecture, it would be worth while to visit the eighth-century church at Bradford-on-Avon (Wilts), which he affirms to be the most perfect specimen of Anglo-

Saxon architecture that we have. Further, he calls attention to the twelfth-century churches at Iffley (Oxfordshire) and Studland (Dorset), where "the carving of the doorways, capitals, and arches, are as good to-day as when they were executed by our Norman ancestors"—which is impossible of verification, but is good in rhetoric. Another correspondent claims that the oldest building in Britain is the Greek theatre of Verulamium, which lies a few feet below the soil at St. Albans, and he is prepared to show, in the same district, Saxon work of 793, Norman of 1077, Early English of 1195, Decorated of 1323, and Perpendicular of 1447, "absolutely untouched as it left the hands of the builder," and therefore, it is to be presumed, a very refreshing exception to the rule of scratchings and pencillings by profane modern tourists. Yet another writer ranks Stonehenge ("B.C. 2000") as a building, and cites Earl's Barton church (Northants) as being perhaps the finest specimen of Saxon church architecture in this country, and Sompting tower (Sussex) as being "full of interest." Other very old buildings that are mentioned in the correspondence are: The garrison church of Dover Castle, believed to have been erected before A.D. 600; St. Martin's, Wareham, and Branscombe (Devon), of the tenth or eleventh and thirteenth centuries. Such data are of course of no particular value to architects, who, however, can hardly fail to note with pleasure such evidence as the correspondence may be supposed to afford of a dawning general appreciation of architecture, even though it may be perhaps regretted that the public interest in such matters is usually confined to ancient buildings, and therefore principally to churches. This is better than absolute apathy, but it does not go much beyond archaeology and history. Yet it approaches architecture, and suggests some faint hope that some day modern work may receive something like its fair share of attention.

"All British" Art.

WITH reference to our note on p. 367 of last week's Journal, on the Society of Painters in Water-Colours, a rather different view of the case is taken by a correspondent, who observes that, in his opinion, the occasion "brought out a fine, full-bodied patriotic speech by Sir Henry Cunynghame, who, in proposing the principal toast, developed to aggressive issues the pleasing fact that water-colour is a purely British art. But that, it appears, is the reason why it never gets fair play in this self-denying country. 'While the British water-colours are stowed away in attics, any piece of foreign pottery or china with some inane device is considered good enough for a grand position. He protested against the running down of things that are English. He wanted a little respect for English art. Much was heard about 'The Mill,' painted by a foreigner, going out of England. Turner's masterpieces were continually going out of the country; yet no voice was raised against that procedure, either by the Press or by the critics. But there! Turner was only an Englishman!' This," our correspondent continues (and to lend currency to his opinion is not necessarily to express approval, or even condonation of them), "is all very appropriate to the time and the place, if not to the spirit of 'this hour of softened splendour,' and it carries us buoyantly somewhere near the crest of the biggest All-British wave that has yet burst over these islands. But when it recedes it will probably leave behind it some few torn weeds, or some few flotsam and jetsam remnants of the old tradition that art is cosmopolitan, that insularity is bad for it, and that merely racial views of it do not necessarily or invariably tend to edification. Turners do not go abroad unwept because the painter was an Englishman, but because he was prolific after his kind; and Rembrandts are not worshipped because their painter was a foreigner, but because they are rich and rare. Yet, even supposing that there is a certain amount of truth in Sir Henry's diatribe, it must still, in justice, be

observed that he rather prejudices his case, and his no doubt very excellent motive, by inveighing against what, after all, is a mere excess of virtue. We should, and must, admire art for what it is, rather than in consideration of whence it came; and our debt to the momentarily unpopular foreigner is too heavy to be lightly repudiated, even in an after-dinner speech. Between the extremes of blind worship for what is foreign, and characteristic hatred of it, there is surely a safe middle course, which leaves room not only for a chastened and rational patriotism, but for that generous and catholic-minded appreciation which is as essential to ethical justice as it is to æsthetic development. Sir Henry does well to depreciate the fatuous worship of a work of art merely because it is foreign, but I cannot help thinking that his protest would have carried much more weight if he had tempered it with the saving grace of a just and generous acknowledgment of our stupendous indebtedness to Continental art. Surely, it ill becomes us to kick away contemptuously the ladder by which we have climbed to such heights as we may be assumed to have reached."

Our correspondent's variations on this well-worn theme are decidedly interesting, but we do not see that he raises any point which calls for a reply.

Builders' General Holiday.

GENERAL publicity is now being given to the movement which, as readers of this Journal were some time ago informed, is on foot amongst the builders of London in favour of closing down altogether during the first week in August. At present, it is said, the staff only works during that week for a little more than twenty hours, and the contention is that, by closing altogether, not only will money be saved, seeing it is the centre of the dead season, but it will be possible to concentrate all the holidays in that one week, and so enable each department to start afresh at the end of the term without any of the dislocation caused by the absence of individual members. There seems to be every prospect that this system will be adopted by all the leading firms, unless expected opposition is met with from the operatives, who are apt to oppose "on principle" any suggestion emanating from the employers; but probably there would be no difficulty in adjusting the matter by means of the Conciliation Boards, should such a difference of opinion actually arise.

The International Hygiene Exhibition, Dresden.

THE Committee that has been formed with the object of organising a British section at the forthcoming International Hygiene Exhibition to be held in Dresden has resolved to accept the offer made by the administration to provide for the British Section a pavilion in the most central part of the Exhibition grounds. This resolution having been communicated to the authorities in Dresden, the latter have decided to render the Committee every possible assistance, and, in responding, have expressed very strongly their desire that England should be represented, "because all the great States will have their own national pavilions, and it would be a matter of deep regret to the English people and to the British Government of England were the only great State not represented in this humanitarian undertaking." England, as the pioneer in hygiene, ought surely to be in evidence in an International Hygiene Exhibition, and the Committee are therefore confident that their appeal for the £3,000 or so required in order that the Committee may not be hampered for want of means will meet with a prompt response. The offices of the Committee are at 47, Victoria Street. Sir T. Vezey Strong is the president, and Lord Ilkeston the treasurer. The building interest involved is too obvious for remark; Dresden, which has been called "The Saxon Florence," used to be, and perhaps still is, a very popular resort for English lovers of "cheap living, cheap good music, and works of art"—the last-named, it is to be hoped, in no respect too cheap. Also it

is quaintly described by the same authority as being "full of squares and beer saloons." Further persuasives to a visit to the Saxon capital are its many fine buildings, old and new; the former including the Gothic Schloss (1534), with its tower 330ft. high; around it being grouped the Crown Prince's Palace, the two Court churches, the Hof Theatre, the Zwinger, and the Museum. The Zwinger is a half-square, half-oval court, surrounded by six pavilions, the largest of which, the Museum, was built by Semper in 1854, with sculptures by Rietschel, and is rich in its collections of paintings, engravings, and tapestries; the painters represented including Raphael, Titian, Veronese, Correggio, Rembrandt, and Canaletto. There are also some fine early churches; and altogether the city is sufficiently interesting to make the International Hygiene Exhibition a very good excuse for a visit, even if the Exhibition were not in itself an ample justification for so long a journey.

A French Painter on London Architecture.

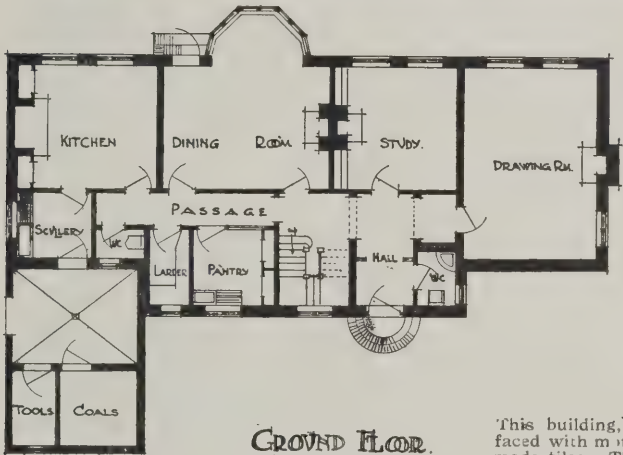
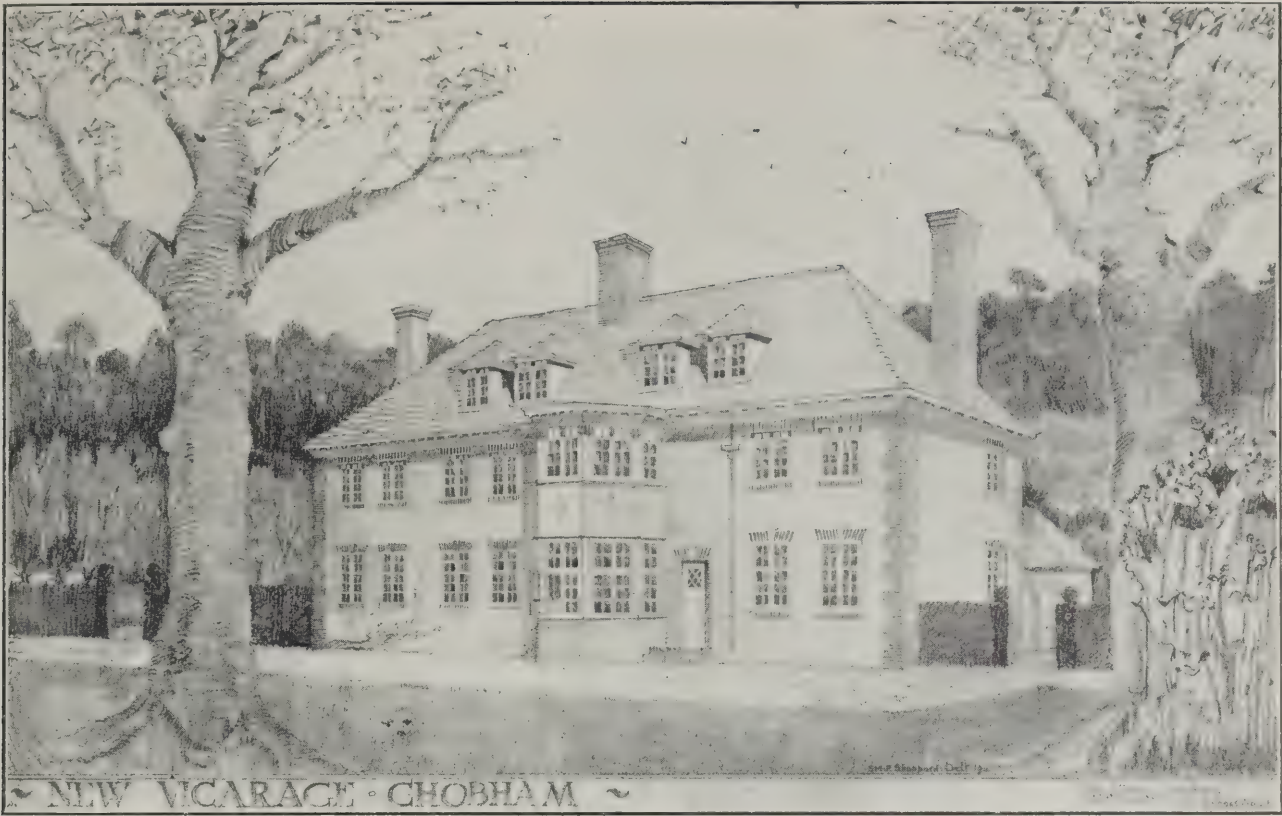
IN Mr. Liddell's delightful book, "Notes from the Life of an Ordinary Mortal," which is attracting so much attention at present, there is a sentence which is interesting as giving an instance at once of the architectural insight of a great French painter and of the inability of "the ordinary mortal" (English variety) to appreciate the architecture of his own country. Mr. Liddell met at Bearwood the late Benjamin-Constant, who probably talked a good deal about art, but Mr. Liddell's only record of him is this: "Benjamin-Constant, the French artist, gave vent to some curious opinions. He thinks the Houses of Parliament the finest thing in London; next, the cupola of St. Paul's; then Waterloo Bridge; but the first-named 'is the most original of them.'" We should say that Benjamin-Constant was perfectly right, and it is interesting to find what an impression this great architectural composition made on the French painter. But the ordinary Englishman never can see that there is anything in the Houses of Parliament; and when a foreign visitor expresses enthusiasm for it, this is noted as a "curious opinion."

A Sixteenth-Century House in Bath.

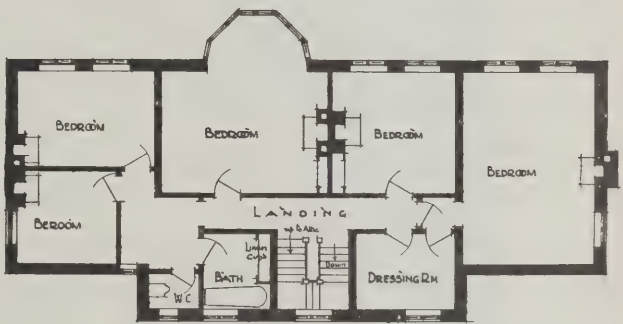
HETLING HOUSE, Bath, which was built about 1570, and is about to be restored, retains many of its original architectural features, some of which, however, have been from time to time somewhat obscured. The work, in fact, is of various dates, and an effort is now to be made to recover, as far as possible, the most distinctive features of its first state. The interior will receive most attention; and, in particular, some late eighteenth-century windows in the principal chamber are to be succeeded by stone-mullioned and transomed windows, with Tudor heads, filled in with leaded lights, decorated with painted armorial bearings. In the large hall there is a fireplace 9ft. 6in. wide by 14ft. high, with surround of classic design. Bath being mainly, as regards its buildings, a city of eighteenth-century growth, there is the more reason for taking steps to preserve such earlier examples as remain to it.

A National Gallery for Athens.

FOR some years past a large number of pictures, bequeathed to the Green nation, mostly by wealthy Greeks abroad, has accumulated in the Polytechnic School at Athens. The first considerable bequest was that of the late Stephanos Xenos, of London, who, in the fifties and sixties, had many opportunities of acquiring, for comparatively small sums, some notable examples of the Old Masters of the Italian, Dutch, and French Schools. To these important additions were made from time to time, so that the number of oil paintings has now reached to something between five and six hundred, including at least one Rembrandt, besides which there are also some excellent water-colour and other drawings. In addition there is an important collection of engravings and



GROUND FLOOR.



FIRST FLOOR

This building, which has just been completed to the requirements of the Queen Anne's Bounty, is faced with mottled bricks, with red brick quoins. The roof is covered with plain red sand-faced hand-made tiles. The architects were Messrs. William Acworth, M.A., and S. M. P. Sheppard, of Adelphi, and the builders were Messrs. J. Harris and Sons, of Woking.

NEW VICARAGE, CHOBHAM. ACKWORTH AND SHEPPARD, ARCHITECTS.

original drawings, the gift of M. Gennadius, the Greek Minister in London. M. Marinos Corgialenio, of London, has provided the sum necessary for a proper building, the plans of which are already approved, and which will rise facing the well-known National Museum of Antiquities.

Newspapers and the Libel Laws.

M R. JUSTICE LAWRENCE, at the hearing of an action for libel, in the King's Bench Division last week, made some strong observations on what he termed "the art of bringing libel actions"—an art which, he added, "has attained to a very high pitch." The time for some such protest was over-ripe, and it is peculiarly gratifying to find that it has come from the Bench in more stringent terms than any that a layman—and more especially a journalist—would care to use. The law of libel, rightly administered, is no doubt a very necessary element of the resources of civilisation. The Press being a most potent engine for good or ill, it is highly necessary that it should not be used wantonly, carelessly, or vindictively, to the injury of any man's moral or professional reputation, or to the detriment of his legitimate business. It is equally necessary that the Press should not be made to suffer similar injury from the

abuse of this principle, and that it should not in this way be deterred from the wholesome exercise of one of its most valuable functions—that of safeguarding the interests of the public by the opportune exposure of fraud, fallacy, or other error. Many recent results of libel actions tend to confirm the impression that the law, in its present state, is very susceptible of being unduly strained in favour of the prosecutor. Obviously exorbitant damages have in many instances been given where the injury, if any, must have been exceedingly slight; and this tendency to pervert the law into an instrument of extortion must tend both to encourage frivolous and vexatious litigation, and to make the conduct of a responsible periodical unruly burdensome. It ought to be possible for a plaintiff in such suits to vindicate his personal character or his business reputation without gravely injuring, or even absolutely ruining, a defendant who can prove good faith and plead as motive an honourable regard for the public interest. Consequently we welcome the measure of relief that is promised in the Bill that has been framed by Dr. Blake Odgers for the Newspaper Society, and we trust that by this means a crying need for reform will be to some extent met, and the liberty of the Press to serve the public with whole-hearted faithfulness will be to some degree restored.

THE VILLA PAPA GIULIO, ROME.

WITH SOME NOTES ON VIGNOLA.

THE villa of Papa Giulio lies in a charming site about a mile beyond the Porta di Popolo, with a full view of Rome and the windings of the Tiber. It was erected by Julius III. at great expense; and most of the talent of Rome was engaged in its erection. Vasari sketched the plans in outline as the Pope explained them, Vignola made the finished designs, and Michelangelo revised them; moreover, scarcely a day passed without the Pope changing his mind and sending new instructions through a chamberlain nicknamed by Michelangelo the Busybody. All this must have greatly hampered the architects, and makes it difficult to decide where one man's work began and another's ended. The main façade and the inner court are, however, almost certainly of Vignola's design. The first is of a formal and stately design, embodying, in Fraser's words, "those pecu-

not relate—and died when his son was still a child; his mother was the daughter of a German leader of *condottieri*. As a boy he was brought up at Bologna to study painting, but he showed from the first a preference for architecture. While still young he made his way to Rome and obtained an intimate knowledge of Roman art in the course of his employment—that of measuring the antiquities of Rome for a society of cultured Roman gentlemen who met to read Vitruvius. Palladio, Serlio, and, at a later date, Inigo Jones, spent their apprenticeship to architecture in the same practical manner. He was also engaged by Primaticcio, the Bolognese architect, and agent of Francis I., to make casts of the principal statues of Rome, and when Primaticcio returned to France in 1537, Vignola, then about thirty years old, accompanied him, and was employed to set up the casts in bronze



VILLA PAPA GIULIO: THE WALL ARCADE.

liarities of design which produced such an effect through Europe that every detail of this building may be found repeated over and over again on this side of the Alps."

The interior court is of charming design; it is semicircular, with an upper storey above a loggia composed of alternate pillars and piers, and encloses a space for dancing, shows, or pleasure-taking. Below it stretch a rather elaborate array of stone walls and fountains, embodying many of the Pope's own conceptions, and designed partly by Vasari and partly by Ammanato, who completed the building. In this work, Vasari tells us, "Barozzi underwent great fatigues, but was, as before, very poorly remunerated."

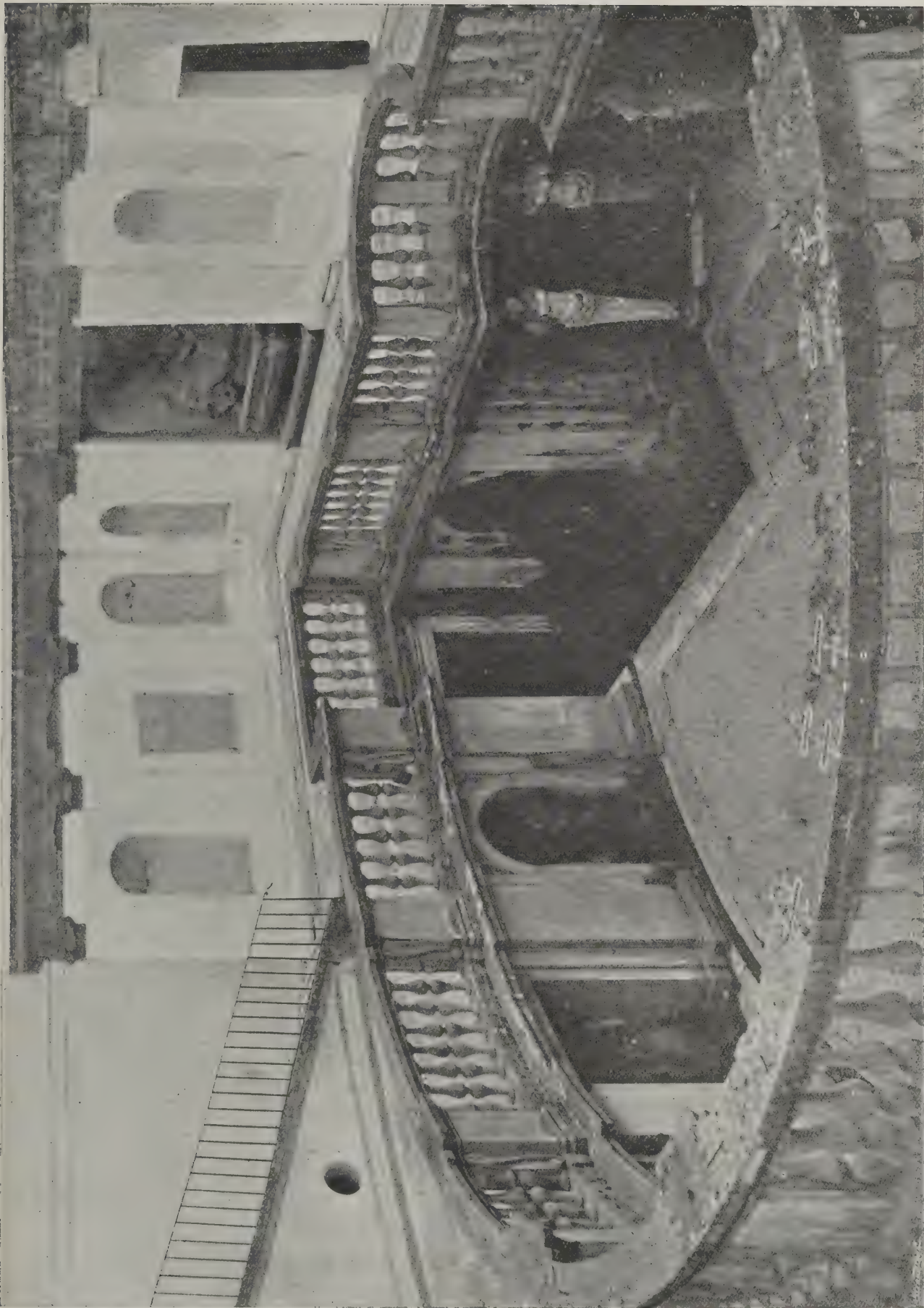
In connection with this building some notes on Vignola may well be given.

Giacomo Barozzi da Vignola was born in the year 1507 in the little town which gives him his name, in the territory of the Modenese. His father was a refugee from Milan—which side he took in the civic disturbances of the day history does

for the gardens of Fontainebleau, and was otherwise engaged with the band of Italian associates in the erection of that famous palace. Here he stayed two years, obtaining experience of building on a big scale, and imbibing by contact with a foreign people that freshness of ideas which distinguishes his later work. No trace of his handiwork is recognisable on the present fabric of Fontainebleau; but his own palace of Caprarola would probably never have taken the shape it has now if it had not been for this journey to France.

On his return to Bologna in 1539 he was asked to design a front for the cathedral of San Petronio; but his design was not made use of, and he consumed some years, according to Vasari, in disputes with his competitors. He also constructed a canal which enabled vessels to reach the city from the sea; "no more useful or praiseworthy undertaking," says Vasari, "was ever executed"; but for this, too, he was poorly remunerated.

The work of Vignola has perhaps especial claims to dis-



VILLA PAPAI (GIULIO ROME) THE FOUNTAIN COURT.

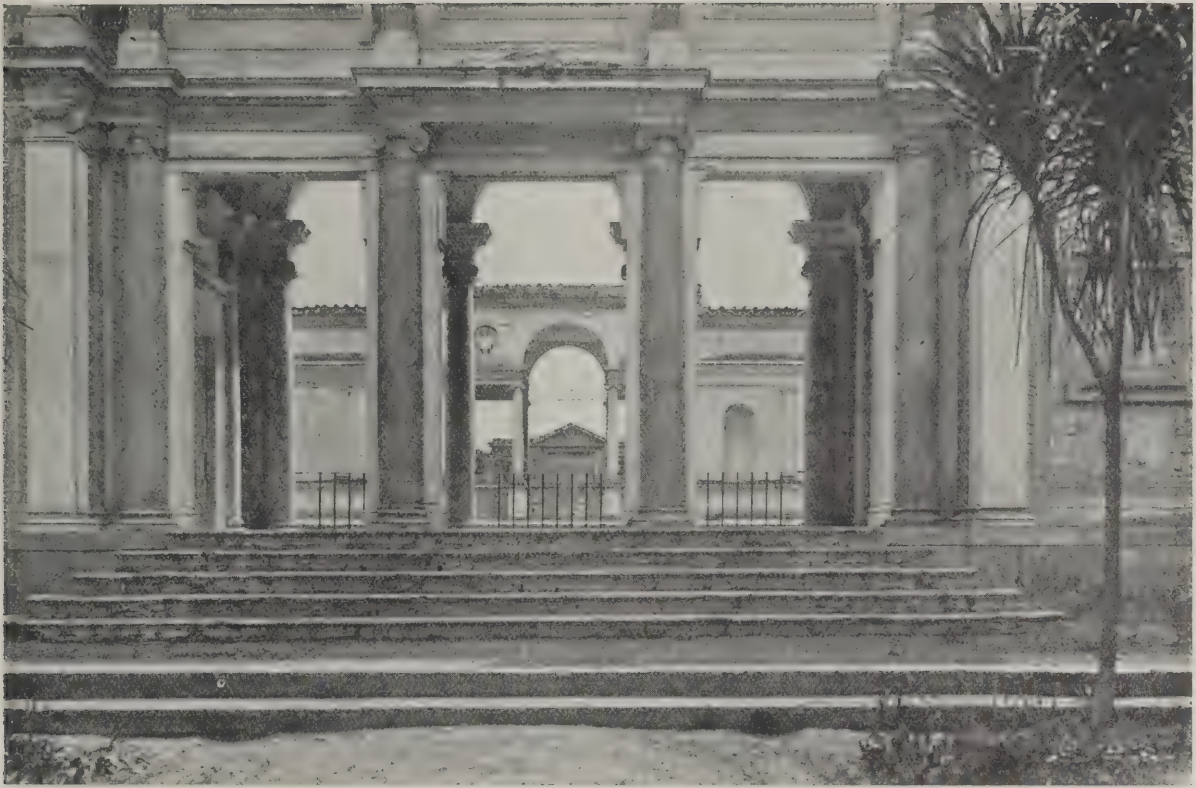
tion, because while the greatest of his contemporaries were painters before they were architects, and impressed on to the architecture of their age a painter's spirit, which it has perhaps never completely lost since, Vignola was by nature far rather inclined to building than to painting; and though he studied painting as a boy and learnt in the studio the importance of perspective design and a sense of decorativeness which marked his work in common with that of his contemporaries, yet his style was consistently subdued to a proper moderation by his understanding of the medium in which he worked. Hence his buildings, while they continue the tradition of Bramante, and are not in essentials unlike those of Michelangelo, Raphael, and the other painters who turned direct from the palette to the compass, have yet elements of stability and permanence which are somewhat wanting in some of the grander designs of his contemporaries. Moreover, his knowledge of ancient monuments was a practical builder's knowledge, which imposed on him a sense of the limits of his art; so that, while attempting no tricks, he came more nearly than any other artist of his day to express again in stone the lost art of Rome. Possibly he would have been a greater architect if his inspiration and ideal had not been so completely limited to the reproduction of antique art; but certainly no other artist of his day came so near fulfilling the ideal of the age. Nor, though he formulated rigid rules, was he a pedant, because his enthusiasm for his art kept him free from being lifeless, as his good taste and sound knowledge preserved him from being grandiose. It was with a sure instinct that the French artists of the next generation made him their model; because there was very little work of Renaissance origin quite so pure and so nearly approaching

perfection within its limits as his. To a very large extent it is true to say that the more he is studied the more his ability as an architect is proved. Nor was he merely an architect. In the study of detail work he was unequalled, and he was also almost the first to carry architecture into the garden and to design those falls of water, cascades, grottoes, terraces, and stone balustrades in which landscape gardeners and architects for the two centuries following the Renaissance so much delighted and indulged. In this work, Bramante and Raphael to some extent preceded him; but it is accurate to say that the gardens of Caprarola, with their many stone fantasies, and their little summer palace, were the first completed ones of their kind, and not only preceded the gardens of the Lante, Aldobrandini, and d'Este villas, but inspired them; and that through their influence on these palaces and the tradition thus set up they have influenced palace building and landscape gardening over all those parts of Europe where artists have studied and opulent patrons have attempted to imitate the art of Italy.

Vignola united in a high degree the capacity to draw original plans with good taste and style. He began life as a follower of Antonio San Gallo, as his work at Placentia shows, but he ended by entirely abandoning that architect's heavy and massive style. The reason is not far to seek. San Gallo belonged, like all his early compeers, to the school of architects who were forced by the exigencies of the time to study defence as well as habitation. The Farnese Palace is, for instance, only the culmination of a type of building of which the Ricci and Rucellai are the originals, and the mediæval castle the prototype. The square massive form, the plain front, and the heavily embattlemented windows,



VILLA PAPA GIULIO: VIEW LOOKING ACROSS COURT.



VILLA PAPA GIULIO: DETAIL.

were dictated not by choice, but necessity; and the architect, while he studied symmetry for the exterior, permitted luxury only in the protected inner court.

Vignola was among the first to carry architecture in a securer and more luxurious age from the town to the country, and to build houses for habitation and show alone. Hence he had no hesitation in making free use of lighter material and exterior decoration; and his buildings are frankly more artificial and tricked out by fancy. It was greatly to his merit that he had the boldness to adapt himself to changed conditions, and by making use of new and original designs to effect the transition from the old palace to the modern villa, and it is to be regretted that his followers did not, while adopting his freedom, preserve also his good taste. It was not, however, only in the house that Vignola was a pioneer; he was almost the first of garden architects, and while the gardens of Caprarola are now ruined, their influence is very perceptible in such famous gardens as the Aldobrandine and the d'Este.

The predominant note of Vignola's work was his imitation of classical forms. In reality it was only skin-deep, and penetrated no further than the exterior of the building. This is, indeed, the great difference that divided him from Palladio. Palladio aimed at reproducing classical proportions in the building as well as the decorations; Vignola was satisfied in fixing the proportions for the pillars, architrave, frieze, or capitals, which he added in marble or stucco to ornament his building; the interior structure and the plan belongs entirely to his own age. He himself compared architecture to music, and the orders to the notes; a comparison only possible, it would seem, to those who regard external decoration as the most important function of an architect.

A word must be said as to Vignola's influence, which was, after his death, very considerable. His immediate followers were Giacomo della Porta and Fontana, who imitated his designs and preserved the restraint of his decorations; and he was indeed the first and chief of the purely Roman school of architects. His details were very famous, and have been

imitated all over Europe, and he undoubtedly had some influence on Palladio. Where he has, however, most affected subsequent generations was by means of his book on the "Five Orders," which was nearly as much studied in France as Palladio's in England. The two, indeed, by establishing the rules of classical art, and popularising, as it were, the whole work of the Renaissance, made the way easy for builders in the classical style; and they may be said to have advanced hand in hand through Europe, driving out wherever they went the last relics of Gothic style, and substituting in its place what they and their followers truly thought the most beautiful of all arts, the Roman art. Unfortunately, as we know now, the Roman style is in itself neither pure nor perfect, and Vignola's and Palladio's work is in that respect nothing more than very beautiful imitation. Vignola, however, deserves far more credit as being the first of villa builders and of garden architects, and the emancipator of architecture from the style of the fortress than as the revivalist of classical forms.

R. W. CARDEN.

THE BUILDING TRADES EXHIBITION.

AS announced in our advertising pages, the issues of this Journal to be published respectively on April 26th and May 3rd will deal specially with the Building Trades Exhibition, Olympia, which opens on April 22nd, closing on May 6th, and of which a fully illustrated account will be given. Our Office at the Exhibition will be No. 60 in Row D, where the Journal, "The Architectural Review," "Specification," "The Practical Exemplar of Architecture," and other publications issued by Technical Journals, Ltd., Caxton House, Westminster, will be on view, and where visitors will be cordially welcomed. The Exhibition has shown increasing popularity with each succeeding term, and there is every reason to believe that the forthcoming show will be in every way an advance on its predecessors, and will prove itself a most influential factor in the business revival of which the building industries are so tardily feeling the effects.

RESTORING A LEAD-COVERED STEEPLE.

The interesting steeple of Barnstaple parish church, which was restored not long ago, under the supervision of Mr. J. C. Southcombe, is of oak framing covered with sheets of cast lead. It was erected in 1389, and rises 68ft. above the tower, which, built of rubble masonry, is 18ft. square, and was built in 1318. The steeple tilts 2ft. 6½ins. towards the south, perhaps in consequence of being struck by lightning in 1805, or because of a shrinkage of the timbers on the south side, or in consequence of interference to which, as will be seen below, Mr. Southcombe has drawn attention. It has been described as "misshapen and devoid of all beauty"; but, on the other hand, the late Sir Gilbert Scott thought it "a most remarkable and interesting structure, giving character and quaint antiquity to the aspect of the church"; and Mr. Laurence Weaver, in his book on "Leadwork," considers Barnstaple spire to be the finest existing ancient timber-framed, leaded, broach spire in this country. Mr. Southcombe found that the lead sheets were full of holes, and had become detached from the timber work, in some cases leaving a space of 8ins. or 9ins. between, and only kept in position by being joined together at the rolls, and by the taper shape of the spire. The boarding was in a bad condition, but the main timbers were not affected very much, except the plates and blocks resting on the walls of the tower.

The structural part of the spire is of oak, with, Mr. Southcombe believes, some chestnut. The bottom part, forming the bellchambers, to a height of 17ft., is constructed of four legs or posts about 10ins. square, supporting the angles of a square frame, and four curved struts, about 10ins. by 5in., supporting the centre of the same frame. From the level of this frame upwards is a central post built up in short lengths, with horizontal beams about 7ft. to 9ft. apart, and the whole strutted out to the shell with small timbers—only the top 9ft. is solid. The outer shell is of vertical rafters, about 4ins. by 4ins., and about 2ft. apart at the bottom, gradually getting closer as they go up: they are braced on the inside by horizontal pieces about 18ins. apart, which also serve as ladder rungs for climbing up the inside. The rafters are covered with oak boarding, which carries the lead. The posts and struts have been badly served by bellhangers, the feet of them having been cut away and small timbers spiked against the sides. Some of them did not carry any weight, which had been transferred to the rafters, and in Mr. Southcombe's opinion this had more to do with the leaning than lightening or shrinkage.

In preparing for the restoration, the scaffolding was erected from the top of the tower only, and not from the ground, in order to avoid resting on the church roof or cutting through it; 9in. by 4in. bearers on edge were passed across the tower walls, overhanging 4ft. on each side; a strong platform was built on them, and the poles erected on it.

The structural timber work was restored where necessary; the principal parts required being new plates, which were put in in four long lengths, "halfened" at the angles, instead of short pieces as before. The damaged posts and struts were properly scarfed and keyed up, and a few new rafters were required.

A curious feature was met with 9ft. from the top, where the spire becomes solid—the rafters stop short at this point, and the upper part is built in a separate piece, starting from a solid block resting on the rafters of the lower part. The upper part at the points of junction overhangs the lower by about 3ins. all round. The only tie between the two parts was three small rafters, all on one side, which were in such a bad condition that the top could have been pushed over by hand after the boarding and lead were removed. They have now been properly tied. In Mr. Southcombe's opinion the spire has been raised about 3 or 4 ft. at this point since it was first constructed.

The method adopted with regard to the leadwork was to repair and relay as many of the old sheets as possible, and using recast sheets for the remainder. By adopting this method, it was possible to retain the old mellow brown-grey colour of the surface, to which new lead, either milled or cast, would not attain for scores of years. The old lead is of two dates—

the bulk of it probably cast in 1636, and a smaller number of sheets of much later date, probably about 1810. The latter is smoother and much whiter, with very little oxide on the surface. It was found that the old lead was almost as pliable as new, and that the old rolls would stand being dressed out flat and returned.

All the old lead was removed in sections of 5 or 6 feet high at a time, after measurements of each sheet had been taken; the boarding was then repaired or renewed, and the lines of the rolls struck out on it, and a template of each sheet made in sawn laths, for the use of the plumbers. The old lead sheets which were fit for re-use were dressed out flat, and repaired by cutting out the defective parts to regular shapes, fitting in small pieces of old lead taken from discarded sheets, and soldering the joints at the back, care being taken not to have a joint where it would interfere with turning at an angle of a sheet; they were then relaid in the same manner as before, but the size of the rolls increased to 1¼in. undercloak, and 2½ in. overcloak, and secured by clips of stout sheet copper turned into the rolls and screwed to the boarding with brass screws. The sheets were relaid in the same order as before and kept of the same shape, but not in exactly the same position, as owing to cutting off some of the ragged edges, and increasing the size of the rolls, each sheet became smaller and had to be put a little further up.

The sheets found too defective for repair were replaced with lead cast from the old scraps and some new pig lead and old sheet lead bought to make good the deficiency. The bottom part of steeple, to a height of about 4ft., had to be left till last, and laid after the main scaffolding was removed, and has all been done with re-cast lead, the large sheets of this portion having been shifted upwards.

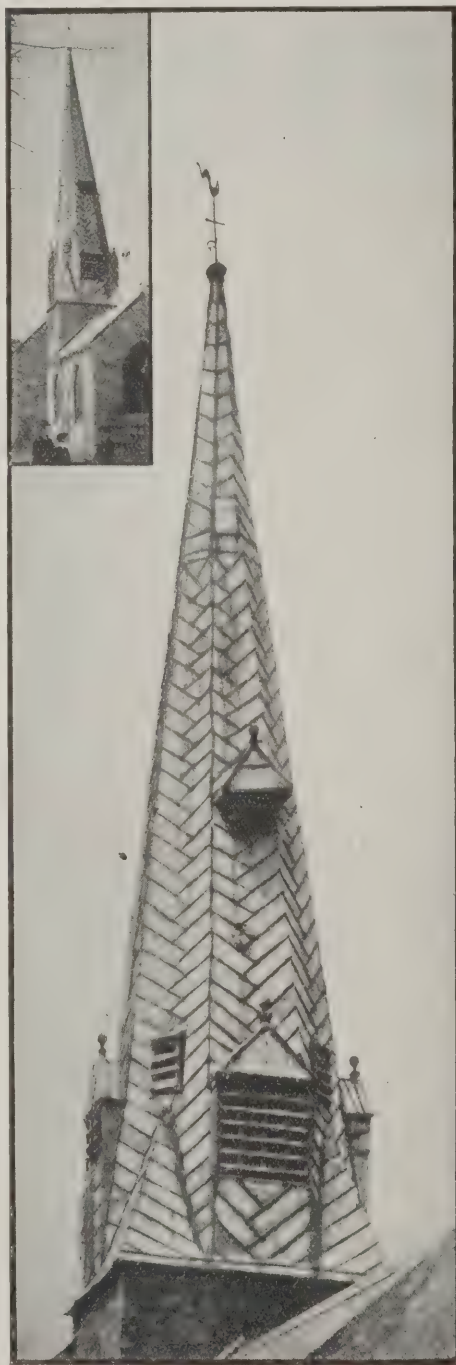
All the old detail was followed as nearly as possible except where it had proved defective; the chief alteration made was in the valleys between the squinches and the main sides of the spire. Originally there was a roll down each valley, and as the rolls of the sheets on each side went down into it and the valley roll could only be turned towards one side, the other side had to be left free for the water to find its way in at every intersection with the side rolls. A slight variation has been made here by using a separate valley piece with an undercloak on each side, so that there are two rolls to each valley, turned towards one another, and finishing nearly close together.

The number of sheets on the body of the spire is 707, of which 540 are old and 167 re-cast lead; these figures do not include the windows, bell hoods, etc., of which the greater part is re-cast lead. The quantity of re-cast lead used has been 6 tons 12 cwt., and the amount added to make up for waste, etc., has been 3 tons 6 cwt.

The plumbers' and carpenters' work was done daywork—the only lump sum contract being for the scaffolding.

A regrettable incident of the job has been that all the plumbers employed in dressing and repairing the old lead became ill with lead poisoning, caused by inhaling in the form of dust the oxide of lead or lead rust formed on the old surface, and some of which became detached in working.

Mr. Southcombe, from whose paper on the subject these particulars have been taken, said that he was much indebted to



THE BARNSTAPLE STEEPLE.

Professor Lethaby (a native of Barnstaple), who wrote him several letters giving valuable suggestions and strongly advocating the method of restoration which has been adopted. It is owing largely to his influence that the Church authorities consented to adopt the more costly but much more satisfactory scheme.

Concerning Lead-Covered Spires.

The Rev. J. Charles Cox, in a communication published in a recent issue of the "Athenæum," protests vigorously against a common tendency to sell the old lead-work on churches in order to meet to this extent the cost of repairs, or even to apply the proceeds to other purposes. Lead-covered spires, he points out, are a special feature of English architecture, owing doubtless to the comparative abundance of lead ore in the kingdom in early days. Such spires not only possess particular value from the ingenuity of their timber construction, and the cleverly diversified way in which the leaden sheets were applied, but they also have no small grace and beauty of their own, particularly in the oldest examples, which have assumed a delightful silver-grey tone from long exposure to the weather.

Beautiful and interesting as are the remnant of these English spires now extant, a far greater number have been ruthlessly destroyed within the last two or three centuries, and not a few within the memory of those now living. Where information is available as to the reason for the destruction of these spires, it is almost invariably found that the cause was a mean idea of economy in order to use the value of the lead for repairs to other parts of the fabric, or even to apply the money thus obtained to other purposes.

Essex possesses a few small spires or spirelets which are lead-covered, the best of them being at Chipping Ongar; and there is also a certain amount of leadwork in the remarkable composite spire of Danbury. But the church of Great Baddow stands alone in that large county in possessing a true lead-covered spire of any magnitude. So far as his experience goes, this spire may lay claim to that often-misused term "unique," for Mr. Cox does not know of any other example in which the leaden sheets have been applied with so much symmetry after a rectangular fashion, tier above tier. He has not ascended this tower, so as to make any examination of the timberwork of the spire, or to study the lead close at hand, and therefore cannot offer any opinion as to its age—whether it is of the date of the tower or possibly of much later reconstruction. He pleads eloquently for the preservation of this spire.

R.I.B.A. LICENTIATES.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I shall be very much obliged if you will kindly call the attention of your readers to the fact that by a resolution of a special general meeting on the 20th March, confirmed at a subsequent general meeting on April 10th, the Council was authorised to continue to elect Licentiates until the end of June, 1912.

I may mention, however, that although the last date on which Licentiates can be elected is June 30th, 1912, all application forms, drawings, etc., must be received here before May 31st, 1912, at the very latest.

IAN MACALISTER, Secretary,
Royal Institute of British Architects.

FASHIONS IN WALLPAPERS.

BY DARCY BRADDELL.

Fashions in wall treatment continue for about three years, that being the usual period paint and wall papers are expected to wear, while fashions in hats seldom live for more than three months, otherwise the regularity with which both appear can only be compared with the sun's rising and setting.

Fashion's Quick Changes.

If there should be anyone doubtful of the truth of this comparison, let him consider the average treatment undergone during the last dozen years by the dining rooms (as an example) of his friends. Twelve years ago one and all were covered with flowered red wall paper; and their wood work, when it was not oak, was invariably painted a chocolate colour. Then, with the advent of monotone papers, the flowered red of '98 gave way to the self-coloured red, and shortly after the chocolate paint made way for white. This was the beginning of an improvement, but a short-lived one, for almost immediately there dawned upon the public the frieze. In some cases this frieze made a pretence of aping the graceful plaster variety used by our Georgian grandfathers, and in others was only a second wall-paper super-imposed upon the main portion of the wall. With the arrival of the frieze, what more natural than the renaissance of the dado? Not the old wood panelled dado known to the eighteenth century, but again the sham plaster variety in countless forms, some even burlesquing both in texture and design forms of Jacobean and Tudor panelling.

The Advance of Taste.

Now let us consider the fashions of the moment. Do the sham friezes and dados still hold their own? I believe not. During the last few years public taste has advanced in leaps and bounds, and the man who has not too much money to spend has turned his back on the revoltingly false plaster frieze, and substituted in its place either the real article of plain white-washed plaster, or, if he still favours the paper type, one that has points of true design about it.

The Discarded Dado.

As for the dado, it has been wholly discarded, for the very good reason that most rooms not being lofty enough to hold both frieze and dado the former has been wisely kept on two counts—(a) because its base-line forms a convenient height to fix a picture rail, (b) because its height from the floor allows of its being distempered, whereas a dado, if it is going to last at all, has to be either painted or made of wood, both being much more costly treatments.

Treatment of the Main Walls.

Arrived, then, at the now prevalent division of the wall surface into first of all the skirting, then the main wall, and finally the picture rail and plain white frieze, let us consider for a space the main wall. Fashion, of course, has changed the colour of this, just as it has changed the frieze; and although the desire for self-coloured papers is still raging, their tones have altered; for, whereas, when these self-coloured papers were first introduced, one saw in almost all cases primary colours such as reds and greens used, now the paper manufacturers are producing enormous quantities of entirely plain grey and brown papers. Whether this change is due to the Bond Street Art Galleries, who quickly showed the public what a splendid background browns and greys formed for

black and white drawings and etchings in thin black or white frames, or whether it was in some measure due to the death and consequent immediate popularity of the late J. M. Whistler, who used these backgrounds in many of his portraits—notably those of his mother and Carlyle—it is not for us to discuss at the moment; but the fact unquestionably remains that low-toned papers are in great demand at the present time. And it is very pleasant to think that this should be the case, for surely the whole theory of self-coloured papers is that they form backgrounds, and backgrounds *only*. For it was soon felt that these papers when printed in pronounced colours such as the green and red at first produced, did not wholly justify their existence, because their colour, being far too insistent, refused to be a background only, and the eye was just as quickly drawn to the wall-paper as to the objects pendent on it. The effect arrived at consequently was most unhappy; the very fact of the paper having no pattern of any kind making it tiresome to gaze upon. With the low-toned papers now in vogue, this, however, is not the case, because the eye is only sub-conscious of their existence, and must at once be irresistibly drawn to the pictures and other objects hung on the wall. Especially is this feeling to be found in the few solitary cases where a highly polished black pitch wall paper has been hung. The effect is very rich indeed, but objects that are allowed the luxury of a black background must be absolutely first class, whether they are gilt mirrors or oil paintings; the reason, of course, being that they are all at a forced value to the first impressions of a stranger entering the room.

The Neutral Background.

At the beginning of this movement for neutral walls, the adventurous amateur decorator at first did not fully realise that when he still painted his woodwork white, he was converting the whole of his walls into a neutral background, driving every scrap of colour from them. He thus found he had two courses open to him: either he could use gay and vivid chintzes and their like for his curtains, chair covers, and cushions, thus bringing the necessary bright notes to his scheme of colour; or he could paint his woodwork any colour that toned. And in many cases this is exactly what he is doing, reverting to the green paint so popular with the æsthetes of the eighties, only of course he is mixing it with plain brown walls instead of the Oriental patterns of William Morris.

And so we see that colour schemes of the living rooms of ordinary houses have suffered a complete reversal during the last few years, the householder now bequeathing to his woodwork the colour twelve years ago he so lavished on his wall.

Bedroom Walls.

Then, with regard to the treatment of bedroom walls. These latter have not materially altered, in that patterned walls still more than hold their own. True, the patterns have altered, becoming much more conventional in design, and of a diminished size more suitable to the scale of the average room. The retaining of patterns in bedroom papers is surely right; for, when all is said and done, bedrooms are places where you sleep and do not live in. Consequently if the pictures are good enough to warrant neutral backgrounds, then they are wasted where they are hung, because nobody ever has time to look at them. On the other hand, if the pictures are bad, the householder either destroys them if he is wise, and pins his faith to the pattern on the wall, or if he wishes to keep his pictures, he still wants his pattern to help them out, as it were.

BOMBAY RECLAMATION SCHEME.

For fifty years, the Bombay reclamation scheme which is about to be carried into effect has been foreshadowed, if not actually advocated, as a means of augmenting the limited area around the Fort. The undertaking which the Government now proposes to carry out is a result of the recommendations of the committee appointed by Lord Lamington in 1907, in which it was proposed to reclaim 973 acres from the sea, 150 acres to be reserved for recreation, and the net area of 2,139,280 square yards made available for building plots.

The plan published with the scheme shows that the reclaimed area will stretch from Colaba Point to the Marine Lines. Its broad features are an immense new residential area, parallel with Colaba as it exists at present, and huge recreation

grounds lying off what is now the Kennedy Sea Face. Allowance is made for the taking up of 40 acres at Colaba Point for a new Government House and grounds, 20 acres of open spaces in the residential area, and 100 acres to be set aside for military purposes, the proposal being to concentrate all the military forces in Bombay at Colaba.

The opportunity thus arises for the evolution of a town-planning scheme that should incorporate the modern ideas to which so much publicity has been given within the past few years. It is therefore as well, perhaps, that the earlier schemes for reclamation were, for various reasons, abandoned. Private enterprise having repeatedly failed—in one instance with financial disaster—Government took up the project.

In 1887 references connected with the disposal of land in the Island of Bombay impressed upon Lord Reay's Government the urgent need of some comprehensive

scheme dealing with the future extension of the city, in the interests of the health and comfort of its resident population and of its increasing industries in mills and factories. A strong committee was appointed to advise Government. Their attention was particularly directed to the distribution of vacant places to buildings of various classes, the improvement and construction of roads with reference to future building extension or railway crossings, the prospects of reclamation, reservation of open spaces, and all such subjects as arise in view of the rapid growth of a city confined within narrow limits, and traversed by two lines of railway.

In 1897 a committee was appointed by the Government of Lord Sandhurst for the purpose of considering and suggesting practical measures for the improvement of the city. The report of this committee resulted in the constitution of the City Improvement Trust. They attached great importance to reclamations along



PROPOSED RECLAMATION SCHEME FOR BOMBAY: PLAN OF LAY-OUT.

the west side of Colaba as a means of providing for the extension of the city and advised that the right of reclamation should vest in the Trust.

Since its constitution the Trust has carried out one reclamation of a gross area of about 90,000 sq. yards. at a cost of about five lakhs. It is well known that this reclamation has proved highly remunerative, but it must be remembered that it was taken in hand as an experimental measure, and that the most favourable part of the fore-shore was selected. No further reclamation has since been attempted.

In 1907 the need for more land in the vicinity of the Fort had become urgent, and Lord Lamington's Government appointed a committee to advise on the feasibility of a scheme of reclamation prepared by Mr. W. H. White, C.S.I., then Chief Engineer and Secretary to Government in the Public Works Department, the probable financial result of such an undertaking, and the best method and agency for executing it. It is this scheme which is under consideration by Government. In the final design the sea wall will not be as shown on the plans, but will run in a continuous easy curve which will add largely to the beauty of the sweep of Back Bay. Government recognise the fact that the reclamation will form a magnificent addition to a beautiful city, and that it is imperative that full advantage must be taken of the unique opportunity that will be offered. As soon as the project is sanctioned, fresh plans will be prepared, and will be sent to "the greatest exponents of the art of town-planning."

Reclamation in Bombay is no new thing. The city is, in fact, built on land won from the sea, just as Venice stands on piles sunk in the mud of the Adriatic; and, but for the process commenced by Governor Hornby when he barred the entrance of the sea to the Flats, and continued down to the present day, the city would have remained a petty town-ship, standing on a few rocky islets in the swamps.

PRESENTATION TO MR. THOMAS BROCK, R.A.

At a smoking concert held on Saturday, April 8th, at the galleries of the Royal Society of British Artists, Mr. Thomas Brock, R.A., was presented with a mahogany roll-top desk and chair in recognition of his services to the Artists' Annuity Fund, the presidential chair of which he has just vacated after holding office for eighteen years. Among those present were Mr. George Clausen, R.A., Mr. Alfred Drury, A.R.A., Mr. W. F. Pomeroy, A.R.A., and many other distinguished artists.

Mr. Frank Short, R.A. (the new President), in making the presentation, said that the fund, started 101 years ago, owed a good deal to the services of Mr. Brock at a certain crisis in its existence, when he investigated the cause of the falling off in membership, and other vital matters. During his term of office Mr. Brock had worked with the energy of half a dozen men, and they now desired to show their appreciation of his services by a gift of practical utility.

Mr. Brock, responding, said he was proud to know that his efforts to promote the interests of the fund had been successful. Artists needed to be provident, for, being men of sentiment, they were unable to battle with life as were ordinary men.

Towards the close of an excellent musical entertainment two members, ludicrously attired, pretended to photograph the company from a high pair of steps, with a home-made camera. From this were extracted a number of photographs of Mr. Brock, which were scattered about the gallery, and which Mr. Brock very kindly autographed for the fortunate possessors.

THE INTERNATIONAL SOCIETY'S EXHIBITION.

In the present exhibition of the "International Society of Painters, Sculptors, and Gravers," at the Grafton Gallery, there is a rather larger proportion of what may be called reasonable work than usual, and some of the pictures which may be classed as experiments in effect are at least interesting and suggestive in that sense.

In the Octagon Room, Mr. Glyn Philpot's two portraits are excellent work. Mr. Harrington Mann seems very uncertain in his ideas of colour in his portraits; his large portrait of Miss Marie Tempest is inharmonious in colour to a degree which is painful to the eye, but in the large gallery he has a portrait group of "Mother and Child" which is most agreeable both in colour and expression, and is one of the best things in the exhibition. Mr. Strang, in his allegorical composition, "Spring," in the large room, has thrown overboard all his fine Titianesque colour, and paints nudes as if they were made of dough, a very disappointing result from an artist who has shown such fine colour in other works; as a composition it is spirited and successful. Mr. Douglas Robinson's "Femme Couchée" is more of a sketch than a picture, but good as such. M. Blanche's "Lady in White," a singularly unattractive personage (but that is a kind of foible with the "Internationals"—they would rather paint ugliness than beauty) is not "in white," but in a dress of a dingy nondescript tone; his "Interieur," further on, is a good example of his ability in painting what may be called still life on a large scale. Mr. Anning Bell's "The South Wind—a Frieze" is a fine sketch of a decorative composition which would be worth painting in earnest; this is only a rather crude sketch. Mr. Nelson Dawson, who seems to have been experimenting of late in sea painting, has got real movement of sea-water in his "End of a North-Easter," though his sea still seems rather in the experimental stage; that an artist chiefly known hitherto as a worker in jewellery should take to something so utterly different as sea-painting is in itself enough to interest one in his efforts. Mr. Footter's "Corfe Castle" (chiefly trees) is an example of his numerous experiments in apparently trying to make landscape look like worsted-work; he has made a manner (it can hardly be called a style) of his own, but one hardly thinks anything can come of painting nature in this fashion; it cannot rank higher than a clever eccentricity. It is quite curious to come across, in this room, two small landscapes by Monet painted forty years ago; the impressionist fashion for making landscape painting a mere "scumble" of pigments has gone to such lengths now, and there are such terrible examples of it in this exhibition; that these two old works of the old pioneer of landscape impressionism seem now like examples of the *juste milieu* in landscape. Architecture

suffers dreadfully at the hands of the exhibitors here; there are two pictures, for instance, of S. Maria della Salute by two different exhibitors, in which the graceful Renaissance architecture is reduced to a kind of smear of paint in which all architectural design and detail is lost. One wishes painters would leave architecture alone rather than maltreat it in this fashion. Even Mrs. Dods-Withers, who has often painted old castles so well, seems to be losing her hold of the art; or else (which is perhaps the more probable explanation) she does not send her best work to the International. Perhaps that theory, too, may account for the presence of Mr. Orpen's disagreeable and heavily painted work, "The Knacker's Yard, Dublin." Why does an artist who can paint so beautifully choose to paint such an ugly subject in so ugly a manner? Something in the atmosphere of the "International" apparently. One really clever and original little picture in the large gallery is Mr. James Pryde's "The Vestibule, Costume Ball," a few scattered figures backed by a high wall with an arch in it. There is nothing in the subject, but it represents an artistic idea.

The Centre Gallery contains a good portrait of a lady by Mr. Oswald Birley, and Mr. Cameron's "The Hills of Skye" is a rather fine landscape with more colour in it than he generally indulges us with. The End Gallery is a medley of small things, some of them clever, many of them preposterous.

Among the few sculpture exhibits Mr. Baxter's "Blind Child" is a good work, and Mr. Tweed's "A Study," which, however, we fancy has been exhibited before. Rodin's "L'Eternelle Idole" also, which represents Rodin at his best, is an old work. Countess Gleichen's "Group of Children for a Sun-dial," three nude children holding up an armillary sphere in metal, is a spirited work, apparently a kind of architectural terminal; "sun-dial" seems to be a mistake in the catalogue.

The Fine Art Society.

The exhibition at the Fine Art Society's Gallery of the Royal Scottish Society of Painters in Water-Colours is a very interesting one, not only for the amount of fine work in it, but because it brings to our acquaintance some water-colour artists whose names are not much known in London. Mr. Nisbet's "A Lonely Shore" is a really grand work. The drawings by Mr. Cochran and Mr. Patrick Dourne are very good, especially the latter artist's "Blowing Fresh—Loch Fyne." Miss Preston Macgoun's "The Unrelenting Sea" is a study of child character which Israel's might have signed. In general, the Scottish water-colour artists seem to adhere to the true water-colour school of broadly-washed effects, but there is an important work of a different class, "Firs in Sherwood Forest," by Mr. Maxwell, which is a remarkable piece of detailed realism, and a most conscientious piece of work of its kind. Among the painters of architectural subjects Mr. Laing is rather too obviously an imitator of the manner of Bosboom, the Dutch painter of church interiors. Mrs. Mackintosh's fantasies in the way of mysterious figures are more curious than reasonable. In another room in the same gallery is a collection of small sketches in Venice and in the Holy Land by Mr. Mortimer Menpes, which are more or less interesting, but which we do not find very attractive.

IN PARLIAMENT.

(By our Press Gallery Representative.)

The Mall Lamps.

In the House of Commons, Major White asked when the pillars at the west end of Birdcage Walk and the south-west entrance of the Mall would be fitted with the stone urns or the lamps for which they appeared to be intended.

Mr. Dudley Ward said the lamps were in course of construction, and would be fitted as soon as they were ready—probably by June 15th, if not earlier.

New Gate at Bushey Park.

Mr. Mills has been informed that the work in connection with the proposed new gate into Bushey Park is provided for in the estimates for 1911-12, and it can be begun so soon as Parliamentary sanction is given for the expenditure.

The New Government Buildings.

Mr. Lough interrogated the representative of the First Commissioner regarding the new Government buildings at Great George Street. He wanted to know whether there was any precise idea as to the purpose for which they were being erected. He also asked particulars of cost.

Mr. Dudley Ward said the question as to which of the several departments requiring accommodation would be installed in the building was still under discussion. The cost of the building was estimated not to exceed £600,000, and plans would be exhibited in the Tea Room. He was not aware of any proposal to erect other buildings in the neighbourhood of St. James's Park and Great George Street.

Insurance of Government Buildings.

Mr. Dudley Ward informed Sir William Bull that the Houses of Parliament and other Government buildings in this country are not insured against fire. The Government takes all risks.

Royal College of Science.

Mr. Grant having asked whether the façade of the Royal College of Science in Exhibition Road would be cleaned, Mr. Dudley Ward said instructions had been given for such attention being given to this building as was necessary.

Suitable Buildings for Labour Exchanges.

Mr. Bowerman wished to know when suitable buildings would be erected for the work of the Labour Exchanges, so that workpeople using the exchanges might have adequate accommodation inside the building instead of being compelled to stand about on the sidewalks.

Mr. Sydney Buxton, President of the Board of Trade, said it was necessary at first to house labour exchanges in such temporary premises as could be obtained, and these had in some cases proved unsuitable. The question of obtaining more suitable premises in these cases was now under consideration.

The Proposed London Museum.

In response to a number of inquiries by Mr. Lough regarding the proposed London Museum, Mr. Lewis Harcourt has supplied the following printed statement:—"The fund for the London Museum was a personal gift to me by a donor who wishes to remain anonymous, and the sum available is also a secret. I have been, for many months, in close communication with the officials of the London County Council and others interested in the history and antiquities of London on this subject. I should

be happy to lend my right honourable friend a French book describing the foundation and contents of the Musée Carnavalet in Paris. The three trustees appointed by the King will be responsible for the control of the museum. The Hilton-Price collection was purchased by me on my own responsibility at a price which is believed to be considerably below both its cost and value, and I have had throughout the friendly assistance and advice of the officials of the British Museum."

Copyright in Architecture.

The Government's Copyright Bill was read a second time on April 7th, and it will be considered by a Grand Committee after the Easter Holidays. The greater part of the debate was devoted to the copyright of books, although a stray allusion was made to the inclusion within the scope of the Bill of architectural works. Mr. Buxton, in moving the second reading, spoke of that provision as something new. The strongest objection came from Mr. Joynson-Hicks, the newly elected member for Brentford. He described copyright in architecture as copyright run mad, and he failed to see how they could distinguish between artistic architecture and non-artistic architecture. Mr. Arthur Lynch had a good word for architecture, and expressed an opinion in this connection not quite flattering to public bodies in the United Kingdom. He said that in France, where civilisation had reached a higher degree than here, they looked at architecture differently. He remembered being in the Chamber of Deputies when a whole afternoon was spent discussing whether a proposed bridge would not destroy the artistic perspective of the Seine. Such discussions, he regretfully added, did not take place in this country.

Mr. Birrell, in his reply to the debate, said that when he heard of the introduction into the Bill of architecture he was startled, but he said to himself, "You must remember you are not an architect." Then he was informed that in France and Germany architectural designs of originality were protected, so he was perfectly willing to listen to reason. He expressed no opinion, but he did not see why architects should not be protected if a case could be made out. Some one had asked where was the originality of an architectural design? He asked in return—what was an original book? The law said they must prove their originality; but few authors had been subjected to that test. One thing certain was that no one could get an injunction by this Bill to remove a house which infringed design. He supposed the remedy would be in damages.

Rural Housing.

On Wednesday week, Mr. Fitzroy asked the Prime Minister whether he would appoint a Royal Commission to inquire into the question of the housing of the labouring classes in the rural districts, to report thereon as to what extent, if any, land which might otherwise be used for building cottages was being withheld by the owners, and to the possibility of providing better housing accommodation without monetary loss to those owners, with a view to introducing legislation dealing with the whole matter if found necessary.

Mr. Burns replied: At present it does not seem either necessary or desirable that a Royal Commission should be appointed to inquire into the question of the housing of the labouring classes in rural districts. So recently as the year 1906 a Select Committee of the House of Commons, appointed to consider the Housing of the

Working Classes Acts Amendment Bill, went very fully into the question, and the Housing, Town Planning, etc., Act., 1909, effected important amendments designed to facilitate the compulsory acquisition of land by local authorities for the purpose of the erection of houses for the working classes. It has not been shown that 'the existing powers under that Act are not sufficient to meet all ordinary circumstances if local authorities do their duty.'

SOCIETIES' MEETINGS.

NOTTINGHAM ARCHITECTURAL SOCIETY.

At the annual meeting of the Nottingham Architectural Society, the Council reported that the membership now consisted of two honorary members, 43 members, and 36 associates. During the year two associates had resigned, one member and five associates had been elected, and five associates had been transferred to full membership, making the total membership 81, a net increase of four on the previous year. The council further reported that it was most desirable in the interest of the profession that all eligible architects should apply for admission to the Royal Institute, either as associates or licentiates, with a view to supporting the proposed Registration Bill. There had been an average attendance of 32 at the meetings, a decided increase on previous years. More interest had also been shown in the designing club attached to the society, and the books in the library had been in more demand. The scale of professional charges had been revised, and would shortly be issued.

The statement of accounts showed that the financial position of the society was sound, with about £71 in hand, and all subscriptions paid.

The following were elected officers for 1911-12:—President, Mr. R. Evans, jun.; vice-president, Mr. E. R. Sutton; members of the council, Messrs. A. N. Bromley, A. E. Heazell, H. Gill, F. W. Gregory, H. G. Watkins, A. Dale, and R. Spencer; hon. secretary and treasurer, Mr. F. M. Royle; hon. librarian, Mr. R. Spencer; hon. secretary to the designing club, Mr. W. H. Swann; auditors, Messrs. A. J. Holbrook and H. A. Dickman.

THE SOCIETY OF ENGINEERS.

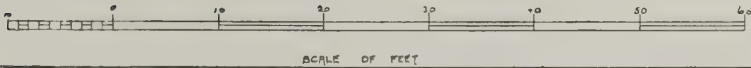
Mr. William Ralph Baldwin-Wiseman, M.Sc., Assoc.M.Inst.C.E., in a paper on this subject read before the Society of Engineers last week, pointed out that during a period of over forty years there had been a steady output of papers, articles, and reports of Royal Commissions and Select Committees of one or both Houses of Parliament, all urging the development of some system of conservancy and the creation of a number of local authorities, acting under the direction of a central authority; but the subject did not appear to have received that attention from Parliament which its importance merited.

The author urged that no general scheme should be engaged in until systematic data had been collected by a special hydrographic survey staff, and when subsequently the local authorities were created to administer the several river basins, the authorising Acts should be general, so that each rivers board comprising all the varied interests of the basin might be left a fairly free hand to administer their area to its best advantage, having regard to its own peculiar interests.

He then dealt in detail with the extreme divergence in the characteristics of river



GROUND FLOOR



SHOPS AT REIGATE. C. E. SALMON, ARCHITECT.

These shops, the architect of which is Mr. C. E. Salmon, of Reigate, are being built upon the site of old cottages which dated from the early seventeenth century, other examples still existing in the same street. The roofs are covered with the tiles taken from the old cottages. The walls are rough-cast, and woodwork stained green. The windows generally are casements with lead glazing, and the entrances and walls beneath the stall boards are finished with mosaic tiling. The party walls breaking the roofs were necessitated by the then existing by-laws, which have since been repealed.

basins in point of size, geological structure, distribution of population, the number of local authorities, the ratable value and the economic and industrial importance of each basin, and pointed out that the characteristics were so diverse that no truly efficient scheme could be formulated which was sufficiently elastic to meet the varied conditions.

The author next reviewed the various schemes for grouping river basins proposed by the Royal Commission on Rivers Pollution Prevention, and by Messrs. Ansted, de Rance, and himself, and gave tables showing the population, ratable value and number of local authorities in each of the twelve groups of his own suggestion.

He then attempted an estimation of the value of the public water interests in the country, and outlined an administrative system comprising a central authority controlled by a Minister of Water Supply, supervising twelve main drainage boards each in charge of an area comprising a group of basins, and river boards each in charge of a river basin. He pointed out from reference to similar organisations in other countries that the cost of maintaining such a body need not be excessive, and suggested that such funds as were required in the first instance might be obtained by the Local Government Board from the Development Fund.

LIVERPOOL ARCHITECTURAL SOCIETY.

On April 8th the President and many members of the Liverpool Architectural Society visited the cathedral town of Bangor to inspect the new university building, of which Mr. H. T. Hare, F.R.I.B.A., is the architect. The university buildings stand on a high hill. The cane-coloured stone with the slight relief of red here and there was much admired. The lines of the building are simple in their design, and it is this simplicity that has made the result so entirely successful. The hillside has allowed much terrace-work to be provided, and no opportunity has been neglected of making the most of the sloping land. Out of their study windows each of the staff professors may emerge on to the asphalt balcony under the eaves of the south elevation and gaze upon the mountains. The tower, with its sloping sides, gives the note of dignity so necessary to a building of such importance. Of the first portion taken in hand, only the great hall remains to be finished, it being now close on four years since the late King Edward VII. laid the foundation-stone of this scholastic edifice, and the whole is to be completed and opened by King George next July.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

At an ordinary meeting of the Council of the above body, held at No. 31, South Frederick Street, the President, Mr. A. E. Murray, R.H.A., F.R.I.B.A., in the chair, a subscription to the Architects' Benevolent Fund was sanctioned. The report of the Examination Committee was again under consideration, and, with a small amendment, was passed. The Committee was asked to prepare a list of examiners and to suggest a date for the first examination. A report from the Arts committee with reference to the portraits of past Presidents and Vice-Presidents was adopted. The by-law as to the admission of members was under review.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editors desire to give notice that answers to the following enquiries can no longer be undertaken:—

- (1) Enquiries about buildings to measure in particular towns and districts.
- (2) Enquiries embodying questions which have been set in examination papers.
- (3) Enquiries which ask for or require the preparation of special designs as part of the answer.

Knotting and Driers in Paint.

E. S. (Chagford, Devon) writes: (1) "Some interior painted work of cream tint is in good condition, except that some knots of the wood are showing. The work is to be repainted with two coats of the same colour as before. What should be used? (2) Kindly give some practical advice as to the best driers to be used in paint."

—If the knots were covered with patent knotting, i.e., shellac dissolved in naphtha and alcohol, before the work was previously painted, they probably require special treatment. Give a coat of knotting before repainting, and while this is tacky give a layer of aluminium leaf. Another way is to give a first coat of shellac and then a coat of gold size; you may paint upon this with safety. Aluminium leaf would no doubt be the best thing to use. (2) The subject of driers is a very comprehensive one and has been treated in these columns within the last six months. Patent or paste driers are mostly used by painters, but they vary so very much in quality that they cannot be considered as reliable unless one buys the very best grade, and then takes care to use as little as possible. Speaking generally, it may be said that the more driers used in a paint the less likely is it to last. The writer believes in a good liquid drier, the best that can be obtained, as the quantity can be accurately measured. You will find some useful information on the subject of driers in a little book published by John Heywood, Limited, of Manchester, at rs., entitled "Arnold's Handbook of House Painting."

A. S. J.

The Cheapest Paint.

L. M. (Purley) writes: "I shall be glad to have your opinion as to what you consider the cheapest paint for rough purposes such as for barns, stables, and out-buildings generally. When I say cheapest I do not mean necessarily a low first cost, but this when taken into consideration with the 'life' or lasting qualities of the paint."

—No series of tests have ever been made which would accurately determine which is really the cheapest paint when considered from "L. M.'s" point of view, but the American Society for Testing Materials is now engaged in experimenting on the subject—testing for such results, for example, as white lead and zinc white ground together in equal proportions. It must always be remembered in considering this subject that the cost of labour in ordinary work has a very great bearing upon the actual cheapness of painting. Approximately, the cost of labour in painting work is, at least, as much as the material. Laxton gives it as 60 per cent. as against 40 per cent. for material, but if we take 50 per cent. it will be seen that the more frequently the work requires to be painted the more costly must be the

preservation of the property in good order by means of paint. Take, for instance, a paint which costs 22s. per cwt., and which has to be repainted every three years, it is clear that one which costs, say, 30s., would be very much cheaper if it lasted five or six years. The writer believes that on the whole graphite paint is one of the cheapest in existence, but then its colour is against it. It can, however, be improved somewhat by mixing it with red or green. Mr. J. Cruickshank Smith, B.Sc., in his book "Oxide of Zinc," gives the results of experiments with oxide of zinc, red lead, white lead, and oxide of iron, which are very well worth studying. Oxide of zinc, he estimates, will require to be renewed four times in 20 years, red lead four times, white lead 5 times, another example of white lead 6 times, and oxide of iron 7 times. Taking the price of oxide of iron at 24s. per cwt., white lead at 32s. and 28s. respectively, red lead at 28s., and oxide of zinc at 46s., it works out that the last named material is really cheapest in the end, although it is dearer than white lead, and like it requires to be renewed four times in 20 years, yet the spreading capacity of zinc oxide is so very much greater (870 against 424) that the total cost of painting and renewal in shillings per coat of 100 sq. yards for 20 years is, for oxide of zinc, 87.82, for red lead 93.06, and oxide of iron, which is the lowest in price, costs on the same basis, 132.20. It ought to be added that frequently in the case of farm property the agriculturists themselves apply the paint in spare time, but even then it is doubtful whether much economy is effected, because an unskilled painter uses so much more paint than a skilled one: and it is essential for durability that the paint be put on, in the words of an authority, "as though it cost one guinea an ounce." A. S. J.

Doorways on Public Highway.

W. S. writes: "A owns 10 houses and the whole of the back road; B owns 10 houses on the opposite side of the back road. A sewers and paves, and pays the cost for, the whole of the road. (1) The Corporation ultimately takes it over and declares it a highway; can B then make doorways to it and use the road equally with A? (2) If in a similar case the Corporation paved the road and charged both sides with the cost, and takes it over, can B then make doorways to the road and use it equally with A?"

—A frontager to a public highway always has an unqualified right of access to it from any point upon his frontage, and the question as to how that particular roadway has become a public highway does not arise. The answer to your enquiries, then, is yes in both cases. F.S.I.

Plaster "Striking Through."

A. S. (Liversedge) writes: "Can you suggest a remedy for preventing new plaster from striking through colour wash or wall paper, where, owing to alterations, large patches of new plaster occur?"

—Messrs. Foster, Mason, and Harvey, of 26, Grange Road, Bermondsey, London, S.E., make a priming composition, which would probably prove effective for the purpose required. Querist is advised to write to them for further particulars. G.

Architectural Societies.

A. E. (London, S.W.) writes:—"I am an architect's assistant (35) and desirous of qualifying for membership of other societies open to the profession in addition

to the R.I.B.A. Kindly name societies, their scope, and the secretaries' names and addresses."

—The Society of Architects is an important professional body. It has for some years been prominent in advocating architectural copyright. The secretary is Mr. C. McArthur Butler, and the offices of the Society are at 28, Bedford Square, W.C. The Architectural Association, of 18, Tufton Street, Westminster, is a well-known educational institution, Mr. D. G. Driver being the secretary. The Guild of Architects' Assistants, inaugurated in 1909, has for its main object the protection of the interests of assistants in the architectural profession. Mr. E. J. Dixon, A.R.I.B.A., is the secretary, and the address is 137, Church Street, Edgware Road, W.

THE REGENT STREET BUILDING LINE.

The Improvements Committee of the Westminster City Council report that they have had an intimation from the London County Council of an application for consent to new building lines for portions of Glasshouse Street, the Quadrant, Piccadilly, Piccadilly Circus, and Regent Street. The plan shows a straightening of the building line of Regent Street from Jermyn Street to Piccadilly Circus, some land being given to the public way and other land taken from it. The corner of Messrs. Swan and Edgar's premises is proposed to be set back some 12 ft., and the land added to the public way, while a small strip on the west side of Regent Street is to be taken from the footway. The plan also shows a rebuilding of the existing columns of the County Fire Office in slightly altered positions, and a slight setting back of the building line on that side of Regent Street, while it is proposed to provide a short passage way for foot passengers under the corner, at the junction of Regent Street and Glasshouse Street. A narrow strip of land on the south side of Glasshouse Street is taken from the footway at that spot. The Improvements Committee of the Westminster Council consider the application objectionable, and are suggesting certain modifications.

DETAILS—OLD AND NEW—V.

The Wey Footbridge, Guildford.

To design a bridge that should harmonise satisfactorily with such a beautiful natural environment as that provided by the banks of the Wey at Guildford was not an easy task, but the accompanying illustration shows that the honorary architects, Messrs. Clemence and Moon, of Guildford, have performed it very successfully. The bridge is built entirely of oak from the Weald of Sussex, and is modelled on a bridge by Palladio over the river Cismone, Italy. The design was selected from more than seventy that were submitted in competition. The dimensions were calculated by Messrs. H. Adams and Son, the consulting engineers, whose advice was taken in view of the necessity of careful provision for the strain of the large span. The clear span over the river is 63 ft. 6 ins., over all 78 ft.; the width inside being 5 ft. The total cost of the bridge was £445 3s. Messrs. R. Wood and Son, of Guildford, were the builders.

Staircase at the "Falstaff Hotel," Canterbury.

No descriptive particulars need be given in connection with this example of a simple staircase with well-designed balusters, as the illustrations are self-explanatory.

THE NEW ARCHITECT OF
ROCHESTER CATHEDRAL.

Mr. Temple Moore, F.R.I.B.A., the Architect appointed to Rochester Cathedral, is the son of the late Major-General G. F. Moore, and was born at Tullamore in Ireland. Mr. Temple Moore was articled in 1875 to the late Mr. G. Gilbert Scott, M.A., F.S.A. Mr. Scott formed a very high opinion of Mr. Moore's ability, and after Mr. Moore had finished his articles, Mr. Scott employed him to act as his assistant architect in some of his work, entrusting him with much of the designing.

Mr. Moore has carried out a good many important domestic works, of which South-Hill Park, Bracknell; Highfield House, Driffild; Dial Close, Cookham Dene; Billborough Hall, Yorks; and Kenwich Hall, in Lincolnshire, among new works, while all very different in style, are almost all equally successful. His entire devotion to the study of his art, with its history

siderable delicacy, especially since one of the conditions of Mr. Moore's designs being carried out was that they were to receive the unqualified approval of three eminent architects; and it is generally conceded that the manner in which Mr. Moore has, in the new work, carried on the dominant features of the old is beyond all praise.

Other church restoration works of Mr. Moore's may be seen at the parish church, Chesterfield; Malton Priory, Yorks; Yaxley Church, near Peterborough, and many others.

Of new churches and other ecclesiastical buildings carried out by Mr. Moore, it is only possible to mention a few out of a very long list, which includes Sledmere Church, Yorkshire; St. Mark's Church and Parish Hall, Mansfield; St. Peter's Church, Barnsley; Eccleshall Church, Sheffield; All Saints' Church, Strood; All Saints' Church, Vicarage, and Parish Hall, Tooting; the Clergy School Chapel, Leeds; the Hostel of the Resurrection for the Mirfield Community at Leeds; Chapel

secretaries, MM. Guilbert and Héraud; members, MM. André, Defrasse, d'Espouy, Marcel, Mayeux, Louis Bonnier, Paulin, and Roussi.

The commission instituted to safeguard the monumental perspectives of Paris, having consulted the authorities on the question whether it is necessary to obtain legislative powers for the creation or preservation of æsthetic amenities in certain quarters of Paris, or whether a simple decree would suffice, has been informed that a law would be necessary. Consequently, the commission has expressed the opinion that Parliament should modify article 3 of the décret-loi of March 26th, 1852, relative to the streets of Paris. This article provides merely for sanitation. It is now proposed that a new clause shall provide for the "preservation of monumental perspectives and sites."

A curious incident has arisen with regard to the Prix de Rome. It was withheld from a student on the ground that he happened to be married. Sympathy is with the youthful Benedick; but unfortun-



FOOTBRIDGE OVER THE WEY AT GUILDFORD, SURREY. CLEMENCE & MOON, ARCHITECTS

and grammar, so to speak, has, combined with his talent, given him almost a unique position as a restorer of ancient work. The gradual restoration of Treasurer's House, York, to its original plan and importance from the four or five different houses into which it had been cut up and much disfigured in the course of centuries, is a very notable example of his skill. The restoration of St. William's College, York, for the Northern House of Convocation, and Gray's Court, York, with many other less important works, give further proofs of his knowledge and ability.

Mr. Moore is probably, however, more famous for his ecclesiastical work. In restoration work of this kind he has had an enormous experience, of which, perhaps, the best example is at Hexham Abbey Church, where, in addition to much important restoration, he has latterly built a new nave and refitted the ancient choir. The task of building a new nave on the foundations of one completely destroyed in the fifteenth century was a task of con-

at the Bishop's Hostel, Lincoln; St. John's Church, Hendon; St. Wilfrid's Church, Bradford; St. Wilfred's Church, Harrogate; St. Cuthbert's Church, Middlesbrough; St. Anne's Church, Royton; St. Margaret's Church, Leeds, etc.

CONTINENTAL NOTES.

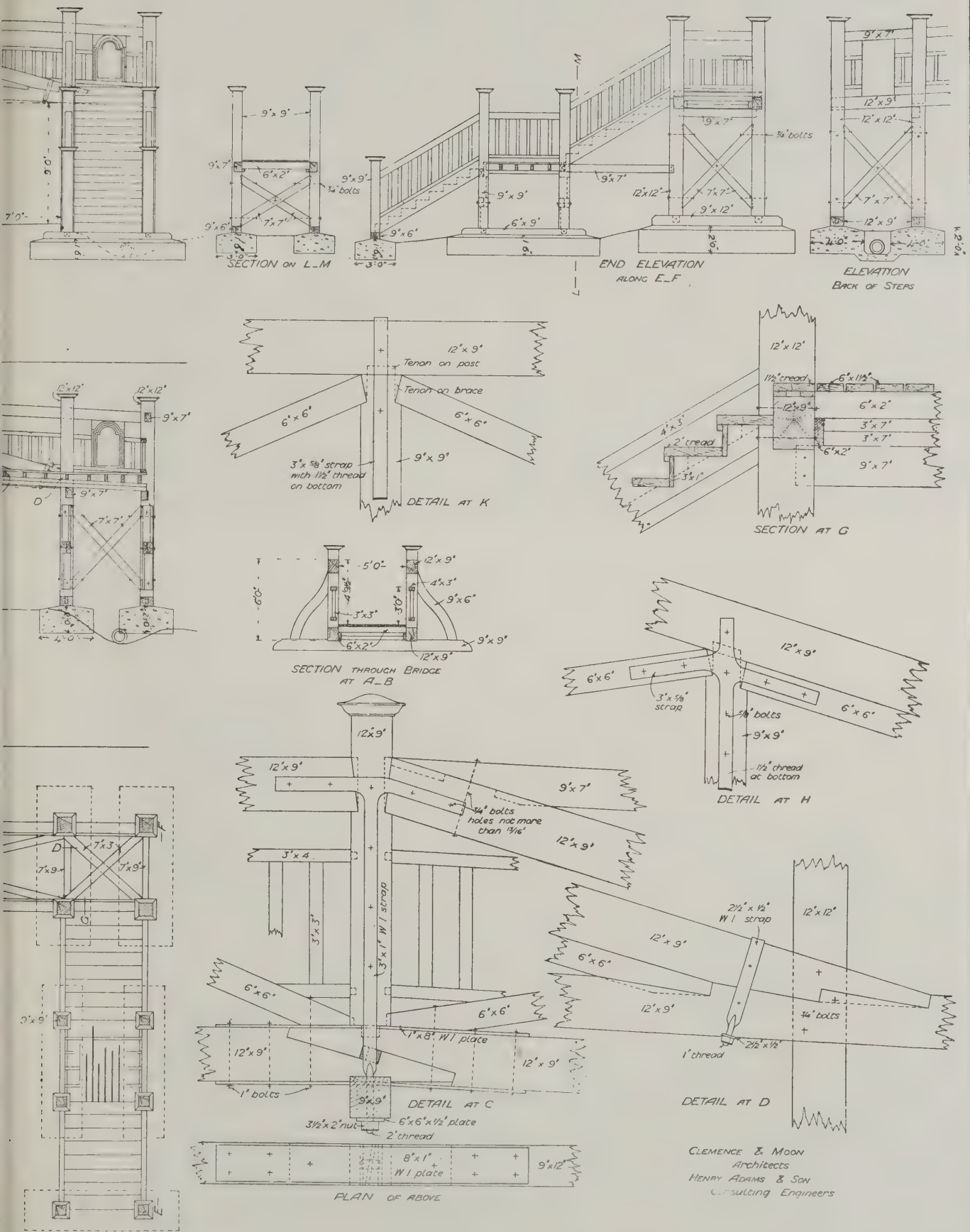
The Société Nationale des Architectes holds its annual meeting to-morrow, at 9.30 a.m., at 15, Rue de la Cerisierie, when M. Christie—a name suggesting strongly the *entente cordiale* that has for centuries subsisted between France and Scotland—will open a conference on "The Duties of the Architect."

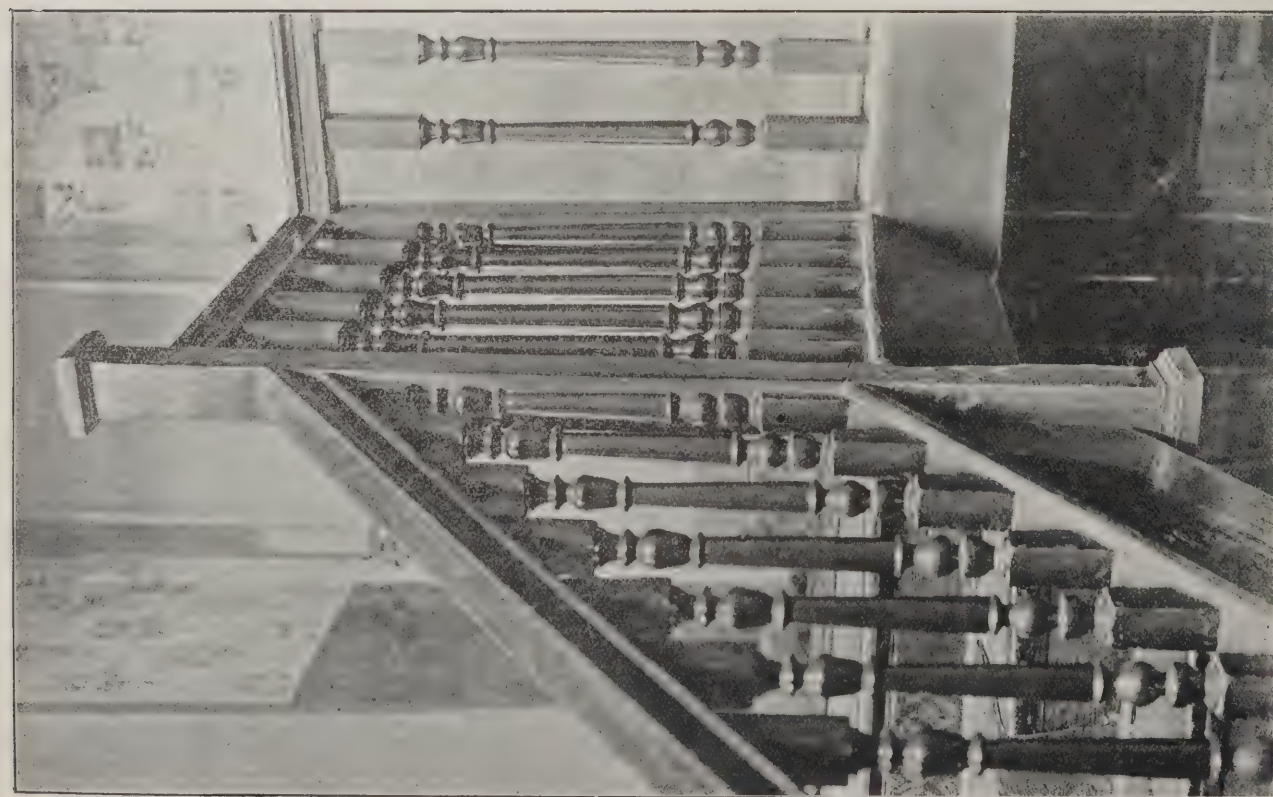
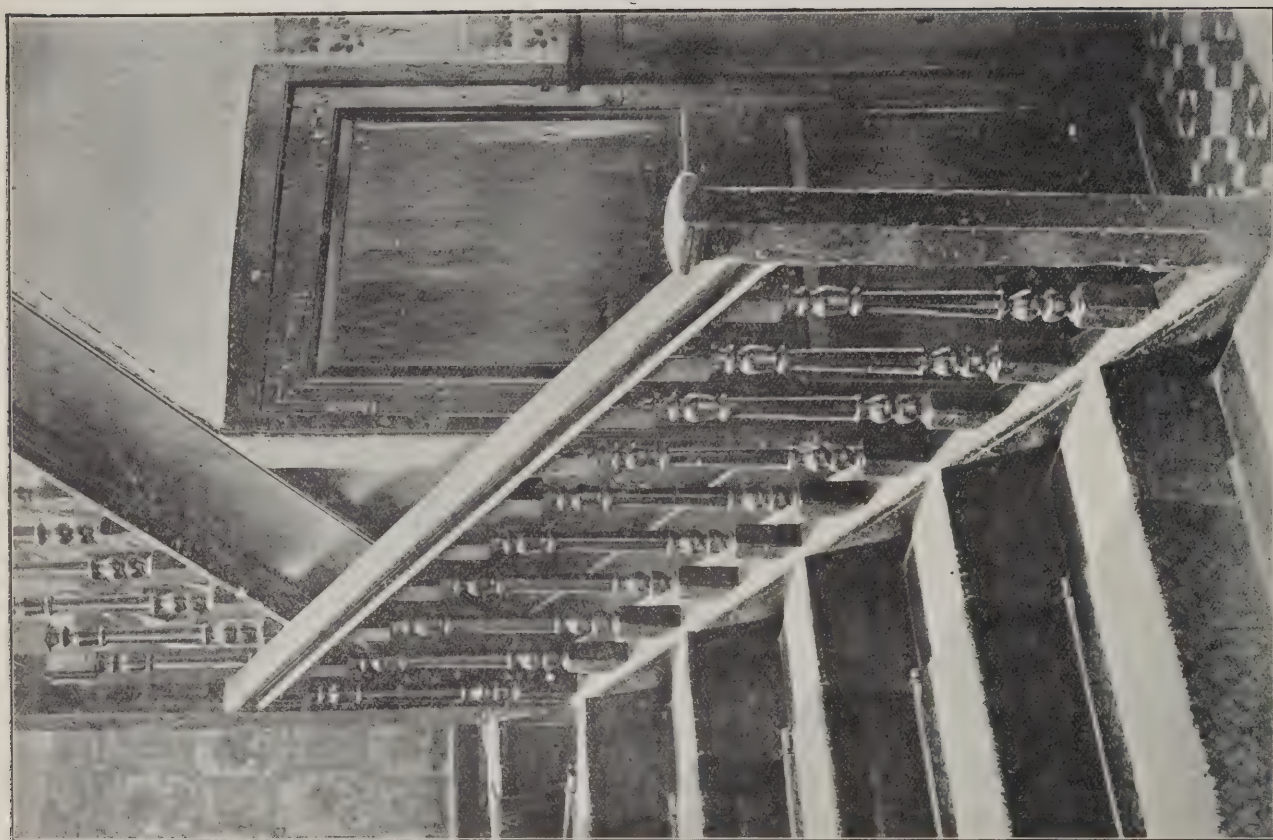
The composition of the jury of architecture of the Société des Artistes Français for the 1911 Salon is announced as follows: President, M. Daumet, member of the Institute; vice-presidents, MM. Moyaux and Pascal, members of the Institute;

nately he must for the moment be content with the prize which he has doubtless drawn in the matrimonial lottery; for, the rules of the Académie des Beaux-Arts, having been authorised by Government, cannot be modified without similar sanction; so that, so far as any prospect of the Prix de Rome is concerned, "a young man married is a young man marred."

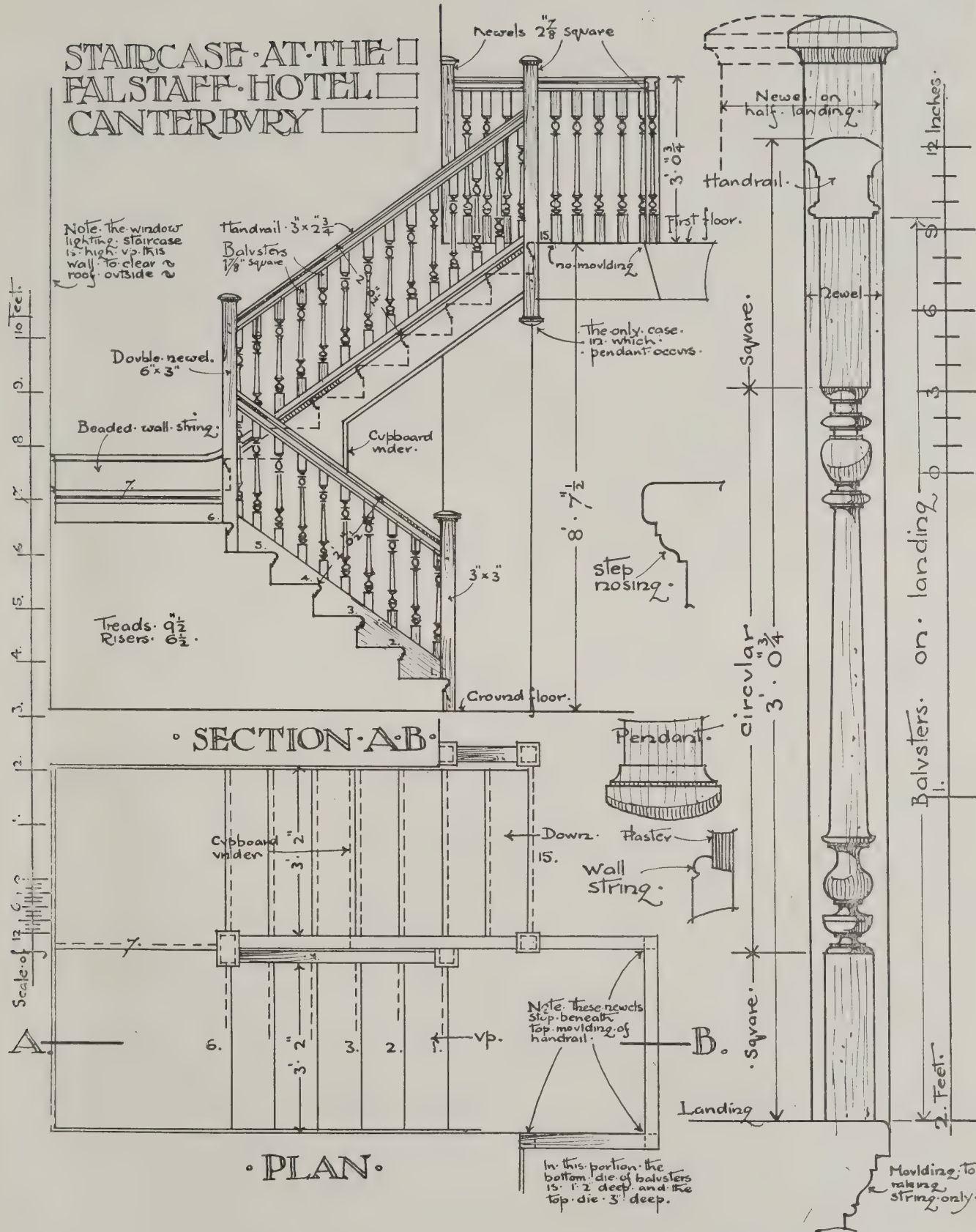
The fifth national congress of the building trades, which began its sittings on April 5th, is organised by the Corporation of Real Estate Owners in Nice, under the auspices of the Central Union of the Building Trade in France. Thirty-three towns sent delegates, and delegates from Berlin represented German real estate interests. On the opening day, reports were submitted by M. Georges Durant and Charles Robert, dealing with the proposal now before Parliament to permit of the expropriation by the State of buildings condemned as dangerous to public health. The congress passed a motion protesting against this proposition.







STAIRCASE AT THE FALSTAFF HOTEL, CANTERBURY.



MEASURED AND DRAWN BY FRANK K. ATWELL.

As a simple type of staircase (perhaps of the seventeenth century) with well-designed balusters, this is worthy of study.
All particulars are given on the drawing.



OLD COTTAGES AT SOBERTON, HAMPSHIRE.

THE VILLAGE OF SOBERTON, HANTS.

Soberton Village, in the County of Hampshire, is near to Bishop's Waltham, and is composed of a few typical country cottages and houses, with manor house. A very cosy and characteristic cottage is here illustrated, as well as the fine old porch of St. Peter's Church. The village stands upon rising ground, with the church placed at the crown. Access to the village and along the Meon Valley has been, during the past few years, facilitated by the construction of the Meon Valley Railway. The station for Soberton is about two miles away, and during the excavations for the railway many Anglo-Saxon relics were found, and were deposited in the British Museum.

Soberton Church is distinguished beyond most Hampshire churches in possessing great architectural interest and merit, representing the periods of mediæval architecture by the transitional Norman of the nave, the Early English of the chancel arch, the curvilinear work in the chancel, and the rectilinear or Tudor tower. Its establishment is of pre-Conquest date, the present church as it now stands having gone through many changes. It has an interesting south porch (shown on the opposite page), and a tower of even greater interest, by reason of its fine proportions and its magnificent peal of eight bells. Little was done to the church in the fifteenth century beyond the heightening of the south aisle; but early in the sixteenth century the north chapel was added, the north wall of the north aisle was taken down for some two-thirds of its height, and rebuilt of less thickness upon the remains of the old wall, and the present west tower was built round the old tower, the east wall of which was incorporated with the east wall of the new tower. This latter was made to project as little as might be beyond the west wall of the thirteenth century church, as the lengthening had brought the wall up to the western boundary of the churchyard. This made it

impossible to find room for a processional path round outside the church whilst still keeping within the limits of the churchyard; therefore the north and south walls of the tower were pierced with archways. A south doorway was set at the extreme west of the south aisle in a line with the passageway, and made of unusual width, but there is no evidence that another doorway was provided in the north-west to correspond. The nave is partly of the twelfth century, with one bay having cylindrical column, plain bell cap and square abacus, and pointed arch of a single order with chamfered labels and plain square responds. There is also a thirteenth century arch with two chamfered orders springing from moulded corbels, and there is a smaller but similar arch. The south arcade is similar, but the two eastern bays have half octagonal responds, octagonal columns with moulded caps, and pointed arches of two chamfered orders, and the date must be but little later than the work at the west end.

SHEFFIELD UNIVERSITY EXTENSION.

Sheffield University Council have decided to extend the buildings devoted to applied science, and plans have been adopted for completing a scheme which will cost £35,000. Plans prepared by Messrs. Gibbs, Flockton, and Teather have been approved, and work will be commenced immediately. The new wing will accommodate on the lower floor the non-ferrous industries. There will be three large laboratories, furnace laboratories, apparatus for melting by electricity, gas, and coke, electro-plate departments, with vats, stamps, etc. On the upper floors will be situated the mining department, completely equipped with survey office, mining museum, lecture-room, and chemical laboratories, with special provision for gas analysis and lamp testing. There will also be a large library and hall to seat 300 persons, which will be available for meetings of various engineering, metallurgical,

and other societies, while in the basement will be the headquarters, armoury, and stores of the University Officers' Training Corps.

REMUNERATION OF COUNTY ARCHITECTS.

At a recent meeting of the Essex County Council the Parliamentary Committee reported that they had received and very carefully considered an application by the County Architect for remuneration in respect of the additional work carried out by him up to the 30th November last in connection with the inspection of premises in the county for which licences under the Cinematograph Act had been sought. There was no doubt that the inspection of these premises had involved a large amount of work, and the Committee were of opinion the Council should make some payment to him in respect thereof beyond his salary as county architect. They therefore recommended that a sum of £150 be granted to the County Architect in respect of the work performed by him for the Council under the Cinematograph Act, from the passing of the Act to the 30th November, 1910. The committee also reported that the discussion of the application above referred to gave rise to a consideration of the present relations of the County Council and the County Architect generally, and an informal conference of representatives of the committees interested had been held, as a result of which the committee feel that the time has arrived when the Council should consider the great increase during recent years in the architectural work of the county, and the arrangements under which such work is carried out, and they recommended that a committee be appointed to consider the whole subject, and, if thought fit, to formulate a scheme for the establishment of a County Architect's department, and the appointment of a whole-time officer or officers, and the necessary staff.

ROCK ASPHALT FOR ROAD-MAKING.

By EDWARD WALKER, A.R.San.L., etc.

With the advent of macadam began a period of commercial demand for better roads, and rollers were soon used to consolidate the metal put on the surface. Horse rollers were used at first, and it is only within the lifetime of some of us that the steam roller was first used in this country, although earlier trials had taken place in France, and it is worth noting that for some time the authorities of many of our most important towns refused to permit one to be used in their districts. The steam roller, however, made such a marked improvement that larger loads on larger vehicles, with an extra horse or two, became the order of the day, and since then a continual demand has been going on for better roads, and now we see our great arteries for traffic demacadamised and in its place a 6-in. or 8-in. concrete foundation has been put, paved up with granite or other good wearing setts.

As the great traffic roads improved, a demand for better private streets arose, and by the Public Health Act, 1875, sec. 150, a new chapter in street works commenced. Private streets must now be made up to the specification of the surveyor of the local authority before they will be taken over. Whatever the materials used, care should be taken that only the best of its class is allowed to be used, and that the work is carried out thoroughly and efficiently. In most cases far too much work is expected of the superintendent or inspector of works to permit of sufficient time being given to each job, so as to enable him to satisfy himself that the work has really been carried out to his satisfaction, so that he may report to his chief conscientiously that the specification has been carried out in a proper manner.

Of the several methods of making up private streets, the author had come across nothing to equal rock asphalt, and although it had always been considered the most expensive, he hoped to prove that this is not so, but rather that it is, on the contrary, one of the best and cheapest methods yet adopted.

Asphalt.

Asphalt is a term used vaguely to denote (a) bitumen or natural pitch, (b) substances impregnated with bitumen, (c) pitches produced artificially from the residuum oils of naphtha and petroleum, shale oil, animal fat, coal tar, and Stockholm tar, (d) tar-macadam or tar-concrete, a paving material composed of gravel or broken stone and coal-tar. Much confusion has arisen from this indefinite naming, but it should be clearly understood that bitumen or natural pitch is not asphalt, but one of its principal ingredients. Asphalt is a distinct natural product like coal, and may be described as "calcareous rock impregnated naturally by bitumen," and, like coal, it is mined. The principal places from which it is obtained are Val de Travers in Switzerland; Seysell and Lovagny in France; Limmer in Hanover; and also from mines in Sicily. For using, the lumps of rock are reduced to powder by machinery, then screened, the coarse pieces taken out and re-ground, and the powder stored under cover. It is afterwards placed in slowly revolving cylinders and subjected to a heat of from 250 deg. to 280 deg. Fahr., or in winter and during cold weather this may be raised to 300 deg.

Fahr. The fire must be of wood or coal, as coke injures the material.

When heating, which takes from three to five hours, the utmost care must be taken, as if overheated the bitumen is fused, and if underheated it will not bind properly, the exact heat varying, however, with the brand of asphalt. The object of heating is to eliminate all moisture and so leave the bitumen in the best possible condition for binding. Formerly the powder was put on the foundation, in its heated state, at from 2 in. to 3 in. deep, according to the thickness at which it was required to be finished; it was then raked to make it even, and rammed with hot rammers or tampers, usually weighing about 12 lb., and finally rolled with a 10-ton roller until the asphalt got cold. Roads made in this way were most satisfactory where the traffic was heavy and so helped to consolidate the material, but for light traffic the mastic asphalt has been gradually introduced into this country and has superseded the powder. The majority of rock asphalts contain from 5 to 10 per cent. of bitumen, and in order to obtain the mastic condition a sufficient quantity of bitumen is added to bring the propor-

tion up to 15 per cent. The bitumen and the powder are then put into a cauldron or boiler and heated up to 400 deg. Fahr., after which the product is run off into moulds to cool, forming flat cakes about 3 in. thick and weighing about 56 lb. each, and it is in this state that it is imported into this country. When required for use, the blocks are broken up again, heated with an addition of from 5 to 8 per cent. more bitumen, and from 20 to 40 per cent. of clean grit. Limestone is recommended by some authorities and sand by others, but in our district $\frac{3}{8}$ -in. screened Dalbeattie granite chippings are used with satisfactory results. Half of the mastic and half of the bitumen are then placed in a combined cauldron and mixing machine, and when melted the other half of bitumen and mastic is added; when the mass is quite soft the grit is added and the composition is spread evenly over the surface. The "cooking," as it is generally termed, takes from four to six hours, during which it should be carefully tended and stirred.

Making up a Street

The method of carrying out the making up of a street may be shortly stated as follows: Taking an ordinary cinder-made



SOBERTON PARISH CHURCH: SOUTH PORCH.

road, the first thing is to have it excavated so as to admit of a 6-in. foundation of concrete and $1\frac{1}{2}$ in. of asphalt, to finish level with the surface-water gullies, with a camber of about 1 in 36 from the crown to the channels. The kerbs should then be redressed if necessary and relaid, and where the footpaths are to be finished in the same manner it improves the look of the street to have the backs of the kerbs dressed to a straight line, so that the asphalt may have a clean line of finish, rather than a wavy one. If the street is on a slight gradient so much the better, as the surface water can then get away without having to make summits in the water tables. If, however, gradients have to be formed in the channels, it will be found that a fall of $1/250$ will be quite ample from summit to gully. It always makes a street look better to see a good depth of kerb above the channels, and the author always has the gullies set at about $5\frac{1}{2}$ in. below the kerb, and the summit 3 in. below the kerb, thus giving $2\frac{1}{2}$ in. end fall either way. If there is a similar fall in the street he has a uniform depth of channel of 3 in. from top of kerb. Before the concrete is put down, it is as well to have all manhole tops, water hydrants, gas valve covers, and gullies adjusted to the camber of the roadway when finished. For the concrete care should be taken that only the first-quality Portland cement of British manufacture by approved makers and complying with the Engineering Standard Committee's specification is allowed to be used. The sand should be clean and sharp, and if necessary should be washed before mixing; the stone should also be clean broken stone, not brickbats, to pass through a $1\frac{1}{2}$ -in. or $1\frac{3}{4}$ -in. ring. The proportions used to get the best results are, I find, $4\frac{1}{2}$ of broken stone, 1 $\frac{1}{2}$ sand, and 1 Portland cement. These should be accurately measured on to a banker and thoroughly mixed by turning over twice dry and twice wet; the water used must be clean and applied only out of a can with a proper rose, or from an elevated tank through a hose pipe fitted with a rose or sprayer. The heights having been put in, a screed is run along the kerbs, and when these have set the concrete is filled in to the required thickness and brought to an even surface with a spade, and worked to a template made to the proper camber. To keep the crown of the road at one regular height, pieces of wood, graded from 0 to $2\frac{1}{2}$ in., or the depth of the fall allowed in the channels, are placed along the screeds, on each side of the road for the template to run on, and this work should be entrusted only to skilled men, who understand making a good and neat job in adjusting the camber to the end fall to the gullies. Any hollows in the concrete should be made level with cement mortar in the proportion of $1\frac{1}{2}$ parts of sand to 1 part cement. No concreting should be permitted during frosty weather, and no softening or retempering should be allowed. The concrete should then be given ample time to mature, as on this depends to a large extent the wearing capacity of the roadway.

The mixed granite asphalt is then conveyed in buckets from the boiler and emptied on to the concrete, where it is taken in hand by skilled workmen who spread it out with wooden floats in the shape of a plasterer's trowel to the specified depth, camber and gradients. Before the asphalt has cooled too far, it should be sprinkled with granite dust, raised to a temperature of not less than 200 deg. Fabr., and then finished off by rolling with suitable rollers for indenting the surface. Where a rock-asphalt street meets another, which is not of the same material, it is well to insert

blocks of granite, from an approved quarry, 9 in. deep and 6 in. wide on edge, to protect the asphalt from the collision which naturally arises when vehicles pass from one material to another of a harder or softer nature, these blocks being, of course, removed when other rock asphalt is to join up to that already laid. At all joints and along the side of the carriage-way there should be an underlayer of fine asphalt to ensure the proper adhesion of the parts. During very cold weather it is as well to suspend the laying of the asphalt, as I have observed that in almost every case where intense cold has been during the period of laying the asphalt is liable to crack and shrink from the sides, no doubt from the contact of the hot material with the cold concrete, which makes it cool too suddenly, and thus contract, or "creep" as it is sometimes called.

The standards for roads, passages, and footpaths are as follows:—

Street carriageways,	6 in. concrete,	$1\frac{1}{2}$ in. rock asphalt.
Passages ..	4 in. "	$1\frac{1}{2}$ in. "
Footpaths ..	3 in. "	1 in. "

Rock Asphalt as a Paving Material.

The advantages claimed for rock asphalt as a paving material may be summed up as taking the premier position against all others thus:—Durability, ease of traction, ease of repair, economy of maintenance, freedom from vibration, facility for cleansing, absence of dust and mud, good appearance, sanitary qualities, ideal surface for motor traffic, poor radiating properties. Its disadvantages are few, the chief being the difficulty of horse traction on gradients of more than 1 in 60, while by some authorities it is said to be dangerous in times of fine rain, mist, snow, or frost. One other advantage the rock asphalt has, not included in the previous list, which I took from that excellent publication called "Specification" (to the publisher of which I acknowledge my great indebtedness in writing this paper), and that is the practically entire freedom from noise, which recommends it to all living in the suburbs.

Cost of Rock Asphalt Paving.

No doubt the cost in the first place prevented its being more fully used, as the price as laid in London appears to have been from 12s. to 16s. a square yard, which was almost prohibitive; but in this district five years ago it could be done at 8s. 6d. per square yard, while at the present time there is no difficulty in getting high-class work done to the thicknesses before mentioned, including concreting, at the following rates: Carriageways 6s., passages 4s. 6d., footpaths 4s. per square yard, and this will work out cheaper than paving or flagging respectively.

Comparing the sanitary aspect, there is no question whatever, as, even if only the passages were made up in rock asphalt, the saving in child life alone would more than compensate for its adoption at twice the present cost. As regards cleansing, the saving there is almost beyond credit, as I find that ordinary granite-paved roads cost about three and a-half times as much as rock asphalt per square yard, the actual figures being, in my own case, for rock asphalt 312d. and for granite-paved roads 1104d. per square yard per annum. The contractors guarantee and maintain their work for ten years, so that there is nothing for maintenance during that period. The first street carried out in the Stratford district, some six or seven years ago, has not cost a penny piece to the contractors since the day they laid it. By its adoption the "mud problem" and the "dust problem" are practically solved, so far as pri-

vate streets are concerned, but there is still much for us as municipal engineers to do in further improvements before the great main roads connecting one municipality with another throughout the kingdom can be travelled, summer and winter alike, without the present drawbacks to both pleasure and business.

PROPOSED NEW HOSPITALS AND INFIRMARIES.

CARNARVON.—Mr. Rowland Jones is to be the architect of the new hospital in connection with the workhouse here. Plans of two sites have been forwarded to the Local Government Board.

COLNE (LANCS).—The Jubilee Cottage Hospital is to have twelve more beds through the generosity of Sir W. P. Hartley, if the endowment fund be increased by the amount of their cost.

KIRKCALDY.—Sir M. B. Nairn, Bart., has offered to defray the cost of extending and equipping the Kirkcaldy Hospital. The extension alone is expected to cost £10,000.

LONDON.—The lease of the Central London Ophthalmic Hospital, Gray's Inn Road, being about to expire, the committee has acquired a site in Judd Street, and building operations have been begun. A sum of £12,000, which includes a grant of £1,000 from King Edward's Hospital Fund, is in hand, but it is only sufficient to build to the third floor. A further £5,000 is required, and it is hoped that this sum will enable the whole building to be completed at one time.

NOTTINGHAM.—Mr. Arthur Marshall, A.R.I.B.A., is architect, and Messrs. Barlow and Sons are the builders of the new eye hospital, which is being built at an estimated cost of £9,000, and will be completed in autumn. Accommodation will be provided for twenty-eight in-patients and there will be an out-patients' department.

SEATON MOOR.—The Parish Council of Seaton Moor has approved the plans of the Derwent Joint Smallpox Hospital Committee for the proposed new smallpox hospital.

SHEFFIELD.—The extension work of the Sheffield Royal Infirmary is now completed, and will be occupied shortly. It comprises six large wards and twelve small isolation wards, and will accommodate nearly two hundred patients. When the patients can be removed to the new blocks certain alterations will be made to the old building to bring the whole establishment up to the modern standard. The total cost of the scheme is about £40,000, and the fund now stands at £33,500.

SOUTH HANTS.—The plans for the new out-patient building at the Royal South Hants and Southampton Hospital, the cost of which was provided last autumn by Miss Burrell's generous gift of £7,000, are in a forward state and have been approved. In April probably tenders will be invited.

STRATFORD-ON-AVON.—Mr. W. Henman, F.R.I.B.A., of Birmingham, is architect for the additions and alterations to Stratford-on-Avon Hospital. A tender of £2,450 by Messrs. Fincher and Co. has been accepted.

WORTHING.—The new out-patient department at the Worthing Hospital has been designed by Mr. A. Morris Butler, F.R.I.B.A., and a contract has been accepted of £2,700. The work is to be completed by the end of September.

LEGAL CASES.

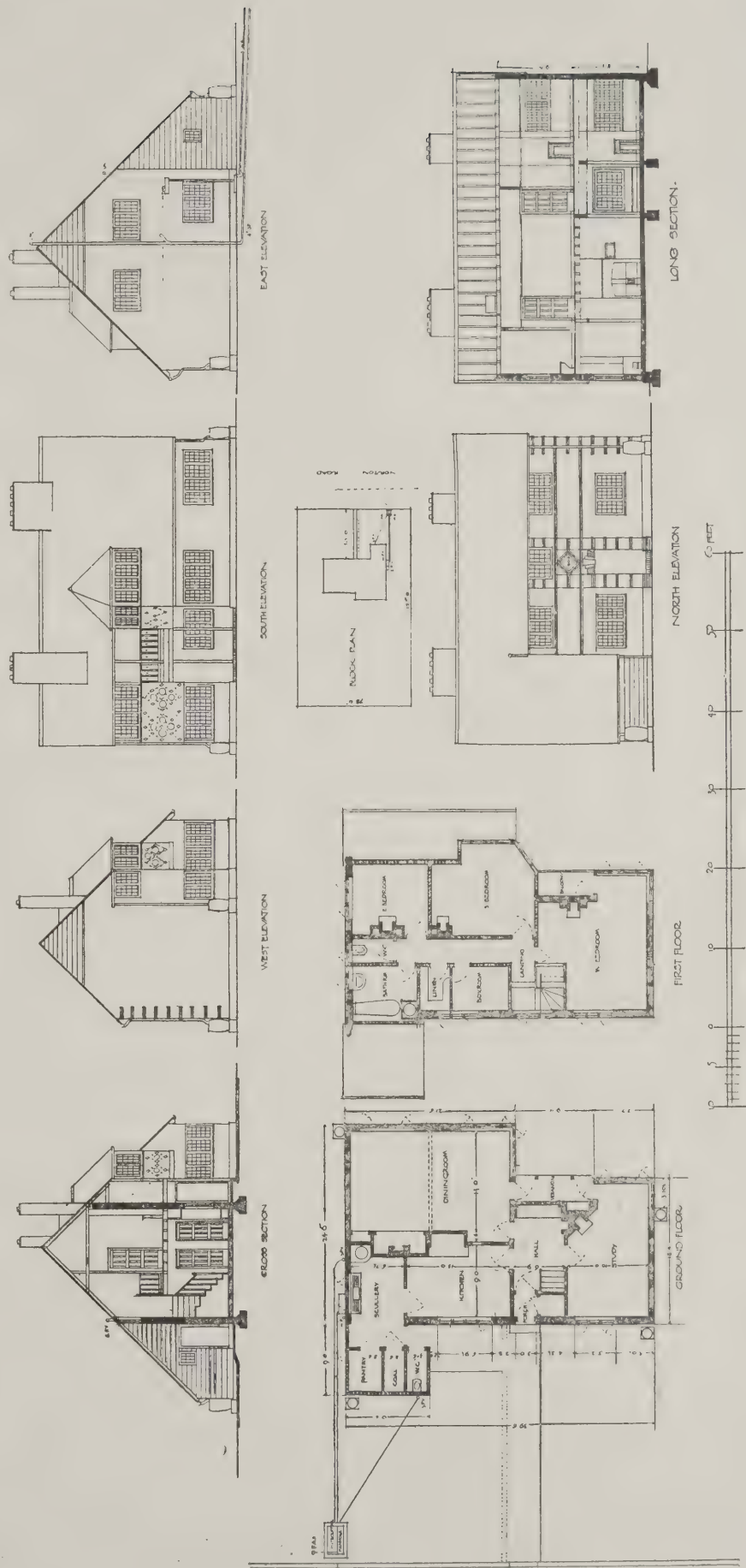
Builder's "Third-Party" Responsibility.

An action was brought at the Scarborough County Court, before Judge Dodd, K.C., in which George Watson, coal merchant, sued W. T. Petch, builder and contractor, for damages alleged to be due to negligence, the amount claimed being £100. The damages claimed were for loss of sight of one eye and the sight of the other eye seriously affected, causing great pain and suffering. It appeared that plaintiff, a coal-dealer, rented a stable, which was being repaired by two men in the employment of the defendant. They put up a ladder against the stable to mend the roof by means of taking away portions of old cement and fixing under the tiles new cement. Plaintiff presently told the men he was going into the stable to harness his horse. He did this because it would be necessary to move the ladder when he was ready to bring the horse out. There would have been scarcely room for the horse to come out with the ladder in that position. When he had harnessed the horse he came out, and, as he was looking up the ladder to the men to ask them to remove the ladder, a piece of old cement or mortar fell from the roof and struck him in the eye. Since the injury plaintiff had had to engage a man to do the work he did himself before, and had paid £13 in wages. That was still going on, and there were doctors' bills and other expenses.—Dr. Vassalli stated in evidence that the probability was that the plaintiff would lose the use of the eye entirely.—A bricklayers' apprentice said that at the time of the accident he was at the top of the ladder. He knew plaintiff was in the stable, and knew he would be coming out, but the next thing he saw was plaintiff holding his handkerchief to his eye.

The Court found that there was negligence on the part of the apprentice on the ladder, whose duty it was either to give warning to the man on the roof to stop or to warn the plaintiff to keep out of the way. Mr. Petch was responsible for the lad as his workman. He did not find contributory negligence on the part of defendant. As to damage, he thought £20 would represent the money loss, but plaintiff must be paid something for pain and suffering. Taking all the circumstances into consideration, he gave judgment for £40 and costs. His Honour added that if the defendant wished to appeal, of course he would afford him every facility.

Jury and Scaffolding.

Mr. Francis Danford Thomas held an inquest on April 9, at Marylebone, on Stephen Daniel Fenn, aged 39, a scaffolder, who met with an accident while engaged in connection with the construction of the Cancer Memorial Wing at the Middlesex Hospital, and who died in that hospital three days later. The workman was engaged in replacing a scaffold, and while he was fastening a bridle pole to another pole, termed a putlock, which was acting as a support for the bridle, the putlock gave way. The pole fell on to that on which the deceased was standing, with the result that Fenn fell to the ground, a distance of 55ft. Another man with whom deceased was working had a narrow escape. Fenn was picked up unconscious, and died in the hospital the following day from extensive injuries, which included eight fractured ribs. A verdict of "Accidental death" was returned, and in a



COTTAGE AT LETCHWORTH. A. MUIR, ARCHITECT.

rider the jury expressed the opinion that there should be a Home Office regulation compelling some person in authority to see that all putlocks were fastened in the course of erection, and that there was a sufficient width of planking to secure the safety of the workmen.

NEWS ITEMS.

Proposed Rebuilding of Lambeth Bridge.

The Improvements Committee of the London County Council are considering a proposal to replace the suspension bridge at Lambeth by a new structure costing about £200,000.

King Edward Memorial—A Suggestion.

Writing to the "Pall Mall Gazette" on the subject of the King Edward Memorial, a correspondent says: "Why not demolish the Duke of York's column and erect the memorial there? It is about the best site in London." Brilliant!

New Building for Royal Society of Medicine.

A new building is now being built for the Royal Society of Medicine at the corner of Wimpole Street and Henrietta Street, Cavendish Square, from designs by Messrs. John Belcher, R.A., and J. J. Joass.

Memorial Window, Ipswich.

A stained glass window of unusual interest, in memory of the late Mr. George Nelson Leech, has just been unveiled in St. Lawrence's Church, Ipswich. The subject is "The Resurrection Morn." At the top are shown the three archangels—Gabriel, Michael, and Uriel. Below, and forming the central theme, are the four women at the opening of the sepulchre, where an angel has just opened the door. The whole subject, it is stated, has been treated in a most reverent and beautiful fashion by Mr. Grylls, of London, the blending of the colours being exquisite. The work has been executed by Messrs. Cubitt and Gotts, of Westerfield.

Architectural Exhibits in the Bristol Museum.

Speaking recently of the value of local museums, at a meeting of the Bristol branch of the Historical Association, Mr. John E. Pritchard, F.S.A., said that the architectural court of the Bristol Museum had many interesting possessions. One of the chief treasures was the original entrance doorway to Spycer's Mansion, on the Back, erected in the reign of Edward III., about 1350. There were also four corbels from the roof of that hall, and from these remains some idea might be found of the wealth of that merchant who, loyal to the city, lived in great style on the bank of its river, taking his part—and a great one—in the French War and in all other movements of that time. Other interesting exhibits in the Museum were a finely carved chimney frieze, bearing the Royal arms and date 1600, and another with the city and Merchant Venturers' arms, similar to one in the entrance hall of the Bristol Waterworks Offices—both from the Welsh Back; some carved oak panelling (circa 1610) from an old house at St. Michael's, which is intended to be fitted up as an entire room; the carved stone Tudor guard-house arch, formerly standing in Wine Street; several interesting chimney-pieces of the Stuart period; and some fine specimens of original plaster ceiling mouldings.

COMPETITIONS.

Cottage Hospital, St. Austell.

Mr. H. Lionel Thornely, F.R.I.B.A., the assessor in the St. Austell Cottage Hospital competition, which was limited to architects practising in the county of Cornwall, has selected the designs by Messrs. R. F. Wheatley, F.R.I.B.A., and E. H. Sedding, F.R.I.B.A., of Wadebridge.

LIST OF COMPETITIONS OPEN.

APRIL 20.—PUBLIC HALL, LEICESTER.—Competition confined to local architects. Conditions (one guinea deposit) from E. George Mawbey, M.Inst.C.E., Borough Surveyor, Town Hall, Leicester.

APRIL 20. HOSPITAL AND SCHOOL OF MEDICINE ARGENTINE.—To be erected at Rosario. Cost, about £149,000. Premiums, £1,050, £700, and £440. Copy of conditions can be seen at the Commercial Intelligence Branch, Board of Trade, 73, Basinghall Street, E.C.

APRIL 22. POLICE STATION AND COURTS, STOCKPORT.—Limited competition. Names, addresses, and qualifications to Robert Hyde, Town Clerk, Stockport.

MAY 1.—LIBRARY AND ART GALLERY, MANCHESTER.—For particulars apply to Manchester Corporation.

MAY 5. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250 for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea.

MAY 10. WARD FOR COTTAGE HOSPITAL, DEVIZES.—The ward is for six beds, and is to cost £1,200 to £1,500. Author of selected plans will be appointed architect. Premiums of ten guineas to author of second design. Particulars (10s. 6d., returnable on usual conditions) from Edward Thorp, Hon. Sec., Devizes Cottage Hospital Committee, Devizes.

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatia, Cumberland.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

TRADE AND CRAFT.

Painting and Decorating Specialities.

Spring and the decorating season having "set in with its usual severity," anything in mitigation of the decoration aspect is very opportune. Messrs. Pinchin, Johnson and Co., Ltd., have prepared a "List of principal colours, paints, enamels, varnishes, etc., manufactured for the decorating and painting trades," and also a special booklet showing, by means of a series of coloured illustrations, schemes for "Deydo" decoration for, respectively, a hall, a "cosy" and "another" (not necessarily the antithesis of "cosy") dining room, a morning room, two drawing rooms, a kitchen, a staircase, bedrooms, a nursery, and a bathroom. The deep and rich colours of this distemper, and the harmonious effects obtained, must go far towards extending the rapidly increasing popularity of this system of decoration, which can now be adopted not only for its eminent hygienic value, but also upon purely æsthetic considerations. Deydo is inexpensive, simple to mix, and easy to use.

In the general list, the materials enumerated and priced are "Minerva" paint-priming, opaque, extra heavy-bodied opaque, gloss white, extra heavy-bodied outside gloss white, inside gloss white, flat white, for finishing, and 120 colours; Pinchin's paste paints in all tints; butterine paste stainers in oil; "Obliterine," "Silveroid," the "Cat's Head" brand of dry colours, "satinette" enamels, bath enamel, "Venus," "Japan," "Deydo," "Wyteceil," for ceiling finish, varnishes for various uses, and various preservative solutions for iron, stone, and wood.

The firm, whose offices are at Minerva House, Bevis Marks, E.C., with branches at Birmingham, Brussels, and Toronto, and whose works cover more than four acres at Pinchin's Wharf, Silvertown, E., lay stress on the great care exercised in the preparation of all their materials under the direct supervision of qualified chemists; the purest materials being combined in the exactly correct proportions which scientific knowledge, coupled with long practical experience, have ascertained with unerring precision. Many very useful practical hints and suggestions are conveyed in the "Deydo" booklet and in the general list.

FIRE AT BEAULIEU.

A studio on Lord Montagu's estate at Beaulieu has been destroyed by fire, and it is estimated that damage was caused to the amount of nearly £15,000. A large amount of photographs and other plant used in the production of aviation maps was destroyed, the fire burning for several hours until the whole place was gutted.

The studio was situated some distance from Palace House, and it was only an investigation into the cause of a failure of the electric light which led to the discovery that it was on fire. The Fire Brigade and the villagers were soon on the spot, and a gallant attempt was made to rescue some of the more valuable plant in the upper storey, but just as an entrance was obtained, the flames burst through the floor and the efforts of the rescuers were frustrated. An adjoining wing, used as a drawing office, was saved. The fire was seen for many miles across the New Forest.





Photos : Thomas Lewis.

NEW TECHNICAL INSTITUTE, NEWPORT, MON. CHARLES F. WARD, A.R.I.B.A., BOROUGH ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

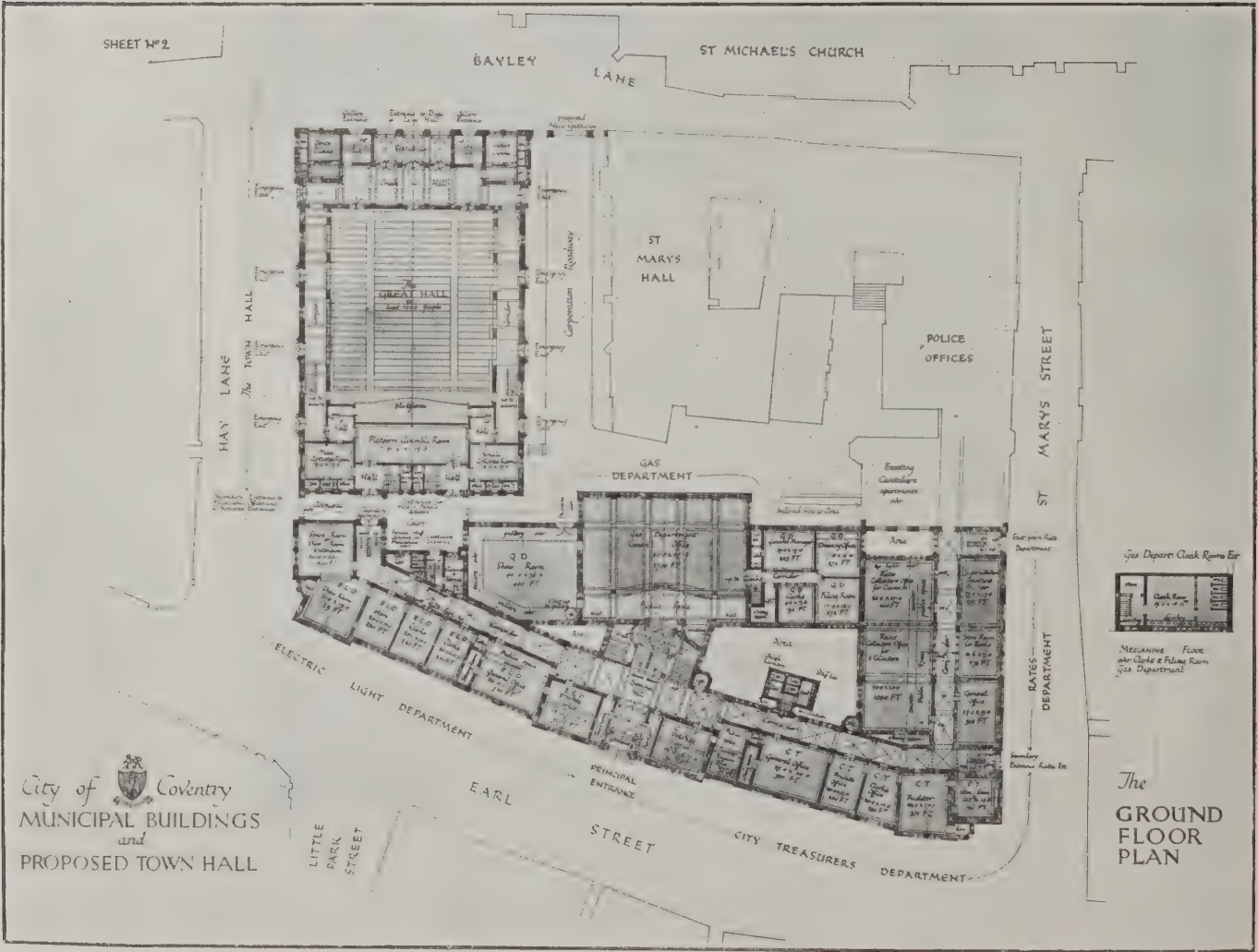
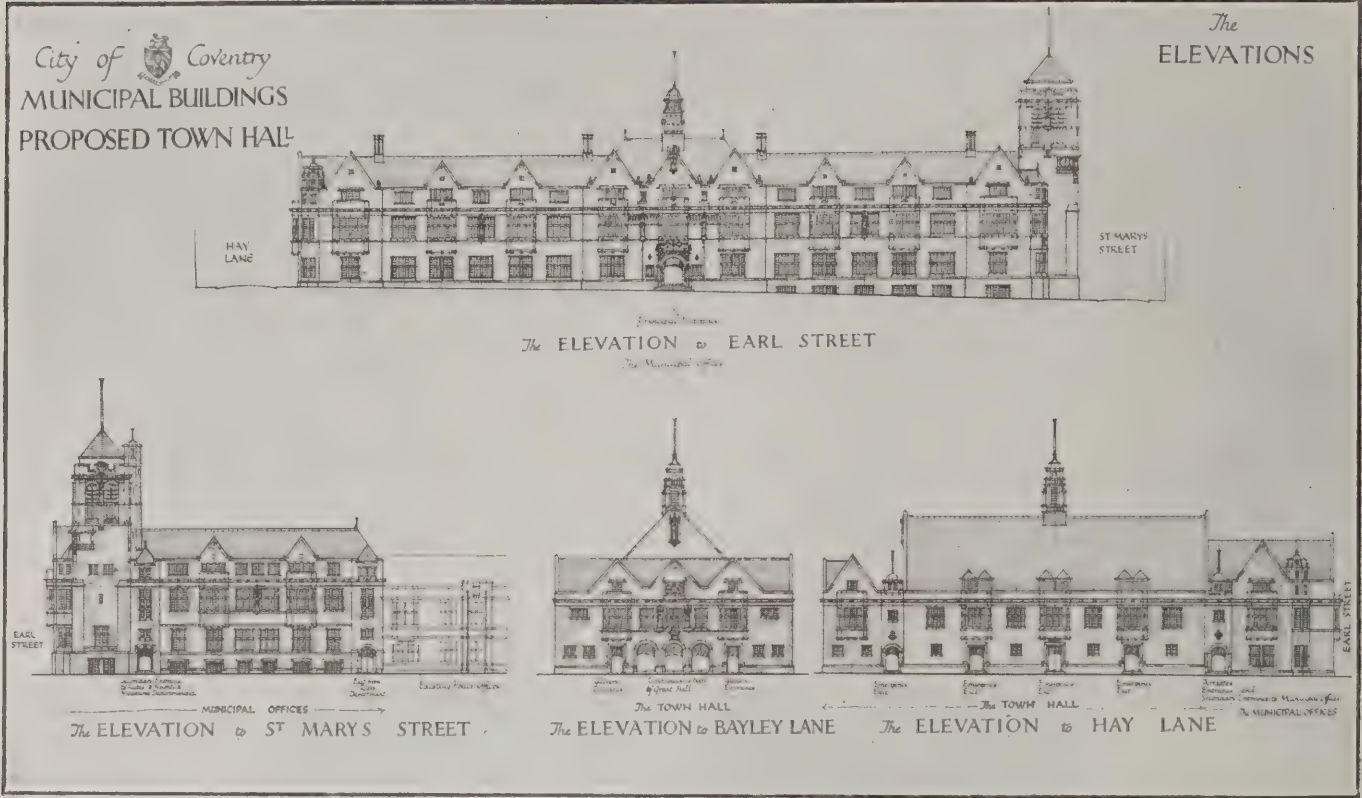
WEDNESDAY,
APRIL 26th, 1911.

Volume XXXIII.

No. 843.



CHIMNEYPiece IN DRAWING-ROOM, MORTON HOUSE, HATFIELD.
A. WINTER ROSE, ARCHITECT.



THE ARCHITECTS' & BUILDERS' JOURNAL.

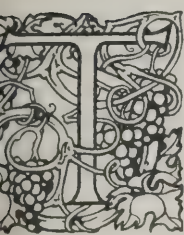
APRIL 26th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 848.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Entasis.



THE word "Entasis" (ἐντασις), which is considered to be derived from the verb ἐντείνω, to stretch or strain tight, is in fact only a bit of architectural "shop," and not a word known in Greek literature, or in Greek dictionaries, though Vitruvius quotes it as the expression used by the Greeks for "the addition which must be made in middle portion of a column ("de adjectione quæ adjicitur mediis columnis"), and he says that he shall fully explain it at the end of the book in which this sentence occurs. This he never does, however, and probably his reference is to an explanatory diagram, which has perished; that there were diagrams affixed to his original treatise there is no doubt, as there are several references to them. If we had his diagram showing the proper setting out of the entasis in the most convenient and pleasing manner, so that it may be, as he expresses it, "mollis"—i.e., graceful, easy, or supple—we should probably get an interesting insight into the way in which the ancients regarded this device.

There is rather a controversy at present among students of ancient architecture as to whether the entasis of columns in the Greek temples was intended to be a grace visible to the eye, or a correction of what would otherwise have been an apparent defect due to optical illusion. The modern sect of faddists who see what they call "architectural refinements" in every existence of walls and every crippled arch or vault, of course do not hesitate to assert that subtle curvatures in the columns and cornices and platform of the Parthenon, for example, were intended to be seen, and to be part of the architectural design. Now there is a certain plausibility given to this view by the fact that in some archaic Greek temples—or some of them—columns which, if not archaic in respect of time, are provincial in respect of site—there is an obvious and perfectly visible curve in the outline of the columns, so that at one time, in some places, there seems to have been an idea that it was a proper thing for a column to show curved outlines. This idea is seen carried out with what may be called brutal exaggeration in the barbarous-looking Doric order of the temple at Assos in Mysia, with columns half as thick at the top as at the base, and with a huge bulge in the centre, as shown in Professor Uhde's recently issued comparative atlas of Greek and Roman orders. This was probably not much later than 500 B.C., but then this may certainly be said to be provincial Doric. If we take Vitruvius to be an authority regarding the ideas of the Greek architects of the great period as to the object of curved lines in architecture, i.e., lines which are vulgarly supposed to be straight, but are found on measurement to be curved—and at all events Vitruvius is the only authority we have to go on—his testimony is perfectly clear, and those who have any doubt on the subject must not have properly studied their Vitruvius. Referring to the necessity for having a vertical curve in the line of the platform on which the columns stand, he says plainly that without this slight upward curve the line of the platform would appear "alveolatus," that is, like a trough (*alveolus*); but he does not explain why this would be the result to the eye; he merely refers to the fact as if it were a matter of common

knowledge. It is quite clear, therefore, that he is here referring to a correction for the sake of avoiding an optical illusion. It seems, therefore, unquestionable that when he refers in another place to the addition (*adjectio*) which has to be made to the columns, "which the Greeks call *entasis*," for the sake of their appearance, he means the same kind of correction of line for a similar object. Here, again, he makes no attempt to explain the reason why this "adjectio" is necessary. What is in his mind is, in fact, quite evident in the passage immediately preceding that in which he makes his passing reference to the Greek "entasis." He says (Gwilt's translation), "the eye is constantly seeking after beauty; and if we do not endeavour to gratify it by proper proportions and an increase of size, where necessary, and thus remedy the defect of vision, a work will always be clumsy and disagreeable." (We will add the original, in the Latin text, as given in the late M. Choisy's carefully prepared edition: "Venustates enim persequitur visus. Cujus si non blandimur voluptati proportionem, et modulorum adjectionibus, uti, quod fallitur, temperatione adaugeatur; vastus et invenustus conspicientibus remittetur aspectus.")

There can be little doubt, therefore, that, although archaic and provincial Doric occasionally displays visibly curved lines in columns, the object of the more intellectual Greek architects of the fifth century was only to employ what may be called concealed curves, to rectify optical illusions. Had it been otherwise, indeed, the fact of the entasis of the columns would have been patent to every observant eye long before Penne-
thorne suspected it and Penrose measured it. We can hardly suppose that an artist like Carrey, who made careful drawings of the pediment sculpture which are still of value as documents, would not have noticed the curve had it been intended as a visible feature in the design, and decisive enough to appear so. But now that people know of the entasis, everyone who draws a Doric column as an illustration, even as small as two inches high, thinks himself bound to show a visible curve which could not possibly have been seen on so small a scale. The column, according to Penrose's measurements, is 31.43 feet high (shaft only, excluding the capital), and the greatest swell of the entasis from the straight line is .057 of a foot; less than 3-4ths of an inch. It requires a pretty large scale to see this as an obvious fact even on paper; and Penrose himself, or his draughtsman, has not escaped this misrepresentation. On Plate 14 of the "Principles of Athenian Architecture," he shows the measurements of the entasis with an exaggerated horizontal scale, and beside it he gives a scale drawing of the actual column, about 7½ inches high without the capital, with a very visible entasis which no one could overlook; but anyone who puts a straight-edge against the curve will find that the deviation of the entasis is drawn as at least double what it ought to be according to the appended scale of feet. This is what happens when people get entasis on the brain.

It is asserted by Pennethorne, in his bulky but most unsatisfactory work, "Geometry and Optics of Ancient Architecture," published over thirty years ago, that the Egyptian columns at Karnac, and some other temples which he mentions, are worked with an entasis. If the fact is correct, it is no doubt of very great interest, but we should feel rather doubtful of it, for this reason: that a people capable of appreciating such a refinement in architecture as that would have shown

more refinement of design in their architecture in other respects. No doubt the Greeks used conic section curves for the sections of nearly all their mouldings, or curves of that character; but that character of curve having been once assimilated, it must often have been drawn by hand from mere feeling and habitude, and it might be the same with the entasis curve; a template would be set out according to what appeared the best proportion of line, and then applied equally to all the columns.

The two practical questions connected with the subject as it affects modern practice are (1): What is the real reason for the better effect of the entasis curve in columns? and (2) what precedent should we follow in regard to it in modern practice?

As to the first point, no satisfactory and conclusive answer has ever been given; but there is the undoubted fact that a perfectly straight-lined tapering column does tend to look hollow in the centre. The effect may be connected with another well-known effect, viz., the tendency of a large square block of building to look larger at the top; an effect which may be seen even in a perspective drawing as well as in an actual building. With a tapering column the eye is entrained into the tapering line of the lower portion, while the upper part of the column, like the square building, looking a little larger than it should at the top, the inclination of the top and bottom portions of the column do not seem quite in a straight line with each other, and a sense of shrinking in the centre is produced. By the entasis, by which the lower lines of the column become more nearly vertical, the eye is not led inwards so much, and the effect of hollowness is done away with. On this theory; it would appear that a perfectly cylindrical column, of the same diameter throughout, would not require entasis; and it is quite certain that an entasis sufficiently marked to be easily visible, though it may be regarded as a grace in a tapering column (if not exaggerated), would have the worst possible effect in a

cylindrical column. It is perhaps on similar grounds the entasis of a tapering spire is very desirable, and improves the appearance of a spire very much, even when the entasis is slight as to be felt rather than discerned, while entasis to a square or circular vertical tower, the same width at the top as at the bottom, would be a barbarism.

As to modern practice, it may be said that we are distinguishing and often absurdly over-entasised at present. This is in great measure the result of the Renaissance movement, and of the bad example many of the Renaissance architects set in this respect, and it seems the fashion at present that the smaller the column the greater in proportion is the entasis, so that the smaller colonnades on our modern buildings seem all swollen and dropsical. This is in direct opposition to the practice of the Greeks, who considered, and probably quite rightly, that the larger the scale of the Order the larger proportion of entasis was needed to produce the desired effect. They do not seem to have had any precisely fixed rule as between height and entasis, but the following dimensions given by Pennell show that there was a general practice in this respect (the dimensions are in feet and decimals of feet):—

Temple.	Height of Column.	Proportion of Entasis
Theseion ..	17.1	.023
Parthenon ..	31.43	.057
Jupiter Olympus	43.70	.118

The conclusion is that what we should do in applying entasis to columns is to go back to the practice of the best Greek period; to treat the entasis as a very delicate curve, not intended to force itself upon the eye, or to destroy the impression of the column as a straight-lined object, but merely to correct its tendency to appear hollow and weak in line. It is the practice of the Greek and not of the Renaissance architect which should be our model.



THE GREAT ROOSEVELT DAM IN ARIZONA.

Photo: L.N.A.

A notable work, just completed, exhibiting a gigantic employment of masonry and concrete.

The Apprenticeship Question.

THE Midland Centre of the National Federation of Building Trades Employers is to be congratulated on its courage in deciding "to request the Board of Trade to bring pressure to bear upon trade unions with a view to the removal of the restrictions which they impose in their working rules limiting the number of apprentices to be engaged in their respective trades." All things considered, this is a bold request, and it rather recalls the olden counsel, "Be bold, but be not over-bold." It would take an over-bold Board of Trade to comply with it. Not but what it is a very proper subject for enquiry; which, however, is a very different matter from taking such action as may be imaginatively inferred from the rather unfortunate phrase "bring pressure to bear." The question of apprenticeship has assumed national importance, and is surely ripe for Government investigation; and if, after due ascertainment of the data, a Royal Commission should see fit to recommend some relaxations of trade-union restrictions on apprenticeship, that would certainly be a kind of pressure which the trade unions would hardly be able to resist. Perhaps this is what is intended by the Midland Centre. If, on the other hand, it is seriously meant that the Board of Trade should deal with the question immediately and casually, by intervention between the employers and the employees, that also would be a legitimate exercise of the functions which this department has been upon many occasions called upon to perform where the parties have been unable to determine a dispute by mutual agreement. In such instances, however, the request has been, not for "pressure," but for arbitration. Upon the general question of apprenticeship, it does not appear that either party would be completely justified in any attempt to throw the blame upon the other side. Trade unions may possibly be over-strict, and employers somewhat lax—the former in imposing onerous conditions, the latter in either refusing to be bothered with apprentices, or in failing, through force of circumstances, to give them efficient training. It is a matter in which, mutual agreement being apparently impossible, State intervention may be justly invoked, but not, surely, in any form of words that, dealing with only one aspect of a rather complex problem, seems, moreover, to be somewhat lacking in the breadth and impartiality that so important an occasion demands. Further, it is questionable whether the "request" really touches the spot. Surely it is not the limitation of the number of apprentices by trade unions that is the crux of the problem. There is, first of all, a great difficulty in getting the right sort of boys to bind themselves for a term of years; and then there is the still greater difficulty of converting them into efficient workmen. These are the perplexities that have to be faced, and it is imperative to approach them in a strictly non-partisan spirit, because they concern not this, that, or the other sectional interest, but the industrial welfare of the nation. This is the dignified and statesmanlike view that the National Federation has consistently held, and it is not for a moment to be supposed that the momentary attitude of the Midland Centre implies any actual or implicit departure from it.

Extending South Kensington Museum.

PLANS are now completed for the erection of suitable buildings for the Science Museum at South Kensington. At present a very large portion of the collection is housed in temporary sheds, some of which are the remains of the series of exhibitions held in the early 'eighties, on land belonging to the Commissioners of the 1851 and 1862 exhibitions, and now vested in His Majesty's Office of Works. Should the present proposals be carried out, the new buildings will run across from Exhibition Road to Queen's Gate, at the back of the Natural History Museum, and it is from the authorities of this institution that the chief opposition to the scheme, as now formulated, is likely to come. Indeed, it is understood that correspondence has already passed be-

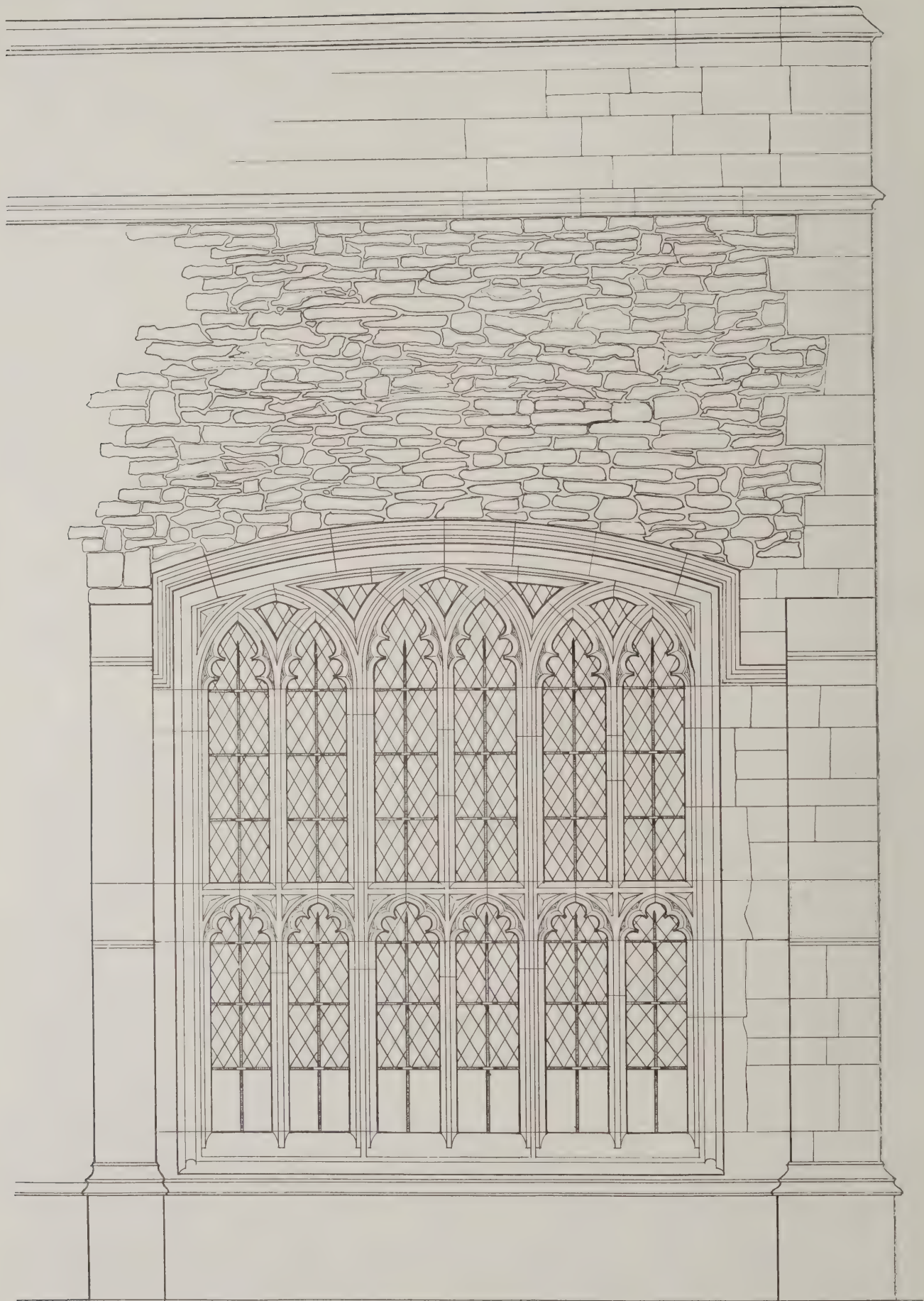
tween the trustees of this museum and the Board of Education, who have charge of the science collection, as to the desirability of using the site in this manner. It is with the patch of ground reserved for this "return west front" that difficulties are likely to arise. This part of the original building was intended to hold the whale gallery, which is now placed in a corrugated iron shed in this neighbourhood. Several buildings, including the spirit house, where alcohol is stored, the photographic department, and the ventilating-fan house, have been built on the waste land at the back. All these will be swept away by the Board of Education scheme. It is expected that questions will be asked in the House of Commons during the next few days with the object of making the correspondence public, and preventing the plans being carried out without adequate discussion.

Coronation Decorations.

IT is announced that the decoration of Westminster Bridge for the Coronation is placed in the hands of Mr. Frampton, Mr. Clausen, and Professor Pite. A writer in the "Times," who signs himself "Modernity," complains that it is intended to erect in the centre of the bridge "an arch of mediæval character," and asks why it is to be mediæval—"why is a sham style to be exhumed for so very modern an occasion?" As a general principle, "Modernity" is quite right, but he perhaps forgets that Westminster Bridge is itself, unfortunately, a specimen of sham Gothic, erected in that style from an idea that it would harmonise with the Houses of Parliament. As the mischief is, in this sense, already done, it may be excusable to keep to it. It is better that the bridge and the arch should seem to belong to each other, bad as the style of the bridge undoubtedly is, than that they should be in two different styles. That is the worst of beginning with sham Gothic—one has to go on with it.

St. Paul's Bridge Before Parliament.

TOMORROW (Thursday) the Corporation of London (Bridges) Bill, which provides for the construction of a new bridge—popularly known as the St. Paul's Bridge—between Blackfriars and Southwark bridges, will be considered by a Committee of the House of Commons. More than thirty petitions against the Bill have been presented, most of them from owners whose property would be affected by the execution of the scheme. The Dean and Chapter of St. Paul's are among the objectors, the possibility of a new subterranean tramway being bored near the east end of the cathedral giving some cause for alarm. By far the most influential opposition comes from the Royal Institute of British Architects, against whose petition the Corporation urges that the Institute "has no *locus standi*." This is a characteristic plea, affording yet a further proof that the Corporation is badly affected by the blight of parochialism. Instead of cordially welcoming the much-needed advice of the only body qualified to give it, the Corporation has simply snubbed and insulted the Institute, and is obstinately persisting in a course for which no one having any pretension to æsthetic perception has a single good word to say. Obsessed with the notion that it is entitled "to spend its own money in its own way," and failing to see that London ought not to be regarded as the last stronghold of Bumbledom, but rather as the capital city of a great Empire, it has been hitherto deaf alike to entreaty and censure, and will deserve no sympathy in the difficulties which it is wantonly creating. Partly through pique and self-will, and partly through inability to rise to an adequate perception of its responsibilities, it is deliberately sacrificing the finest opportunity it has ever had, or perhaps ever can have, of emphasizing the nobility of London. We trust that the Institute will take every possible means of convincing Parliament of the validity of the larger view, and thus of saving the City Fathers from inflicting, in a fit of spleen, an irreparable injustice on London.



Scale of ins  of feet.

WINDOW IN FARRINGTON CHURCH, BERKSHIRE. MEASURED BY J. M. W. HALLEY.
DRAWN BY BERNARD R. PENDEREL-BRODHURST.



Exterior View.



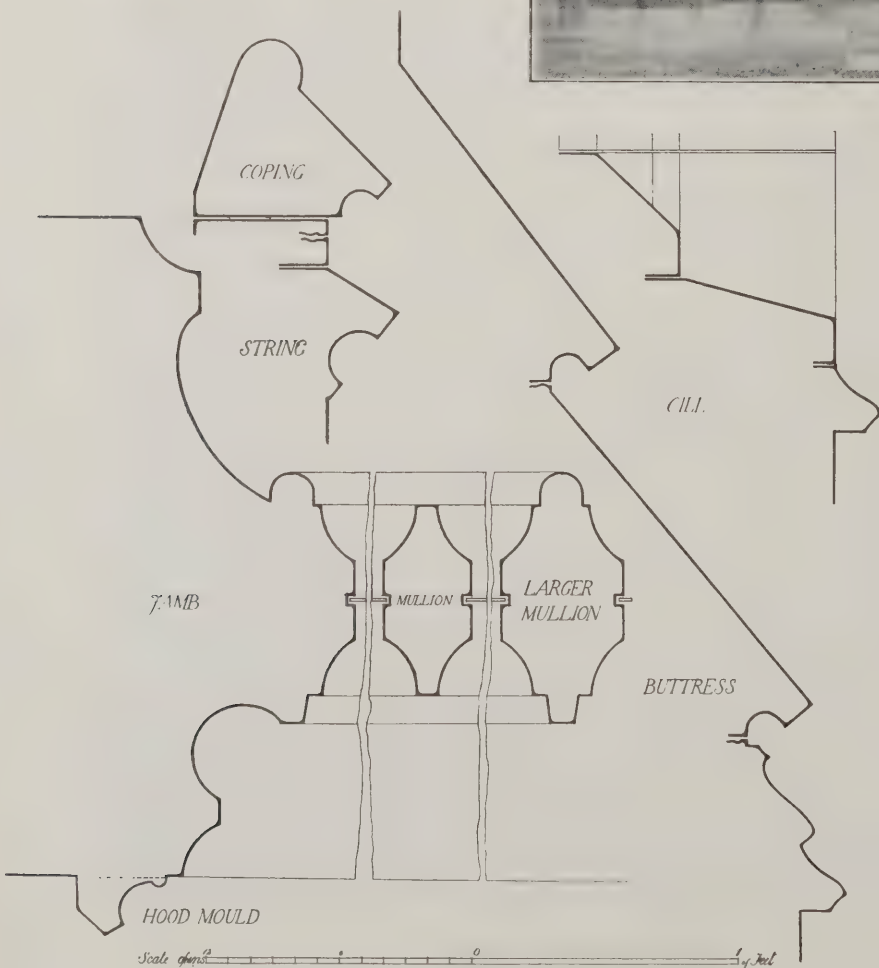
Interior View.

WINDOWS IN FARRINGTON CHURCH, BERKSHIRE.

DETAILS—OLD AND NEW—V.

*Windows from Farringdon Church,
Berks.*

Farringdon Church possesses two fine late Gothic windows in the north aisle. This aisle would seem to be an addition of the 15th century. It has a flat ceiling carried on oaken beams cut to an extremely flat arch. The windows, however, the subject of the accompanying illustrations, are the chief points of interest. There are two of them, exactly alike, and designed to admit a great deal of light. The days of the dimly lighted aisle were passing away, and it was becoming the object of these old builders so to fret the walls of their churches that one marvels how they stand. The church of St. Thomas, at Salisbury (a late building) is wonderful in this respect. It is *plein jour* within its walls, and the north aisle at Farringdon presents the same effect. Its windows have six lights, divided about the middle with transoms ornamented with cusps. Emphasis is given by subdividing the lights into pairs and widening the alternate mullions, so that the narrow mullion is of one order, the wider of two, and the jambs of three. The details explain this feature. To finish these windows with such a flat arch is rather unusual. It gives an effect of horizontality, which is further increased by the string-course placed above the windows, and the straight unbroken coping to the parapet. The masonry of the parapet is ashlar, while below it is a charming piece of rubble walling. The contrast of the two is extremely pleasing; it is, however, the result of good building, and not anxious design, for when the wall was of a sufficient thickness it was possible to finish



WINDOWS IN FARRINGTON CHURCH, BERKSHIRE.

the outside in rubble, whereas in the thin wall of the parapet (about roins.) it was necessary to bed the stones carefully, and to make them in one thickness. Between the windows and at the angle are built graceful buttresses, tied to the window by the strong moulding of the sill. A fairly heavy hood moulding separates the beautiful masonry of the windows from the rubble frieze, and gives the whole a fine air of completeness.

J. M. W. H.

Nottingham Eye Infirmary.

Nottingham's new eye infirmary, of which the foundation stone has just been laid, will accommodate twenty-eight in-patients, and the out-patients' department is to comprise a waiting-hall to accommodate eighty people, a consulting room, two dark-rooms, a dispensary, and a microscopic room, and a waiting-hall for patients at the dispensary house. On the ground floor of the in-patients' department are to be located the wards for male and female patients, an operating-room, an anæsthetic room, a waiting lobby for visitors, a casualty room, and a bath and lavatory annexe for each ward. The staff rooms are to be situated on the first floor and while provision is made for an additional storey if the need should arise, the roof is to be built flat, and arranged as an airing court for the patients, with ample facilities for shelter. The total outlay is estimated at £9,000. Mr. Arthur Marshall, A.R.I.B.A., is the architect.

NOTES ON REINFORCED CONCRETE.

Surface Treatment. Probably the chief prejudice that has yet to be overcome with regard to reinforced concrete is that which is excited by its surface appearance. No matter, the objectors say, how cunningly it may be treated, the surface always retains a dull or dead appearance compared with which the meanest of stones seems brilliant. This may possibly be prejudice and nothing more. Similarly, terra-cotta has been condemned, but for the exactly opposite quality of over-brightness, and it may be that in both instances the prejudice will disappear as the respective objects become more familiar. But, at any rate, the point is worth more consideration than has been hitherto given to it. Colouring (mixed with the cement) has been sometimes employed with the object of relieving the deadness; which, however, like Beatrice's beauty, is "in grain." It is a matter of texture and consequent light-reflection. Hence the common practice of facing reinforced-concrete buildings with stone, which practice may be anathema to the uncompromising purist, but has nevertheless much to be said in its favour, and, until some means of rendering the finish more attractive is discovered, is likely to prevail. It ought not to be very difficult to devise a finish that would look vastly more vigorous than that which is at present supposed to be characteristic of the material, but may in fact be merely characteristic of the mixture as commonly employed. If it were tentatively suggested that the mixture of the facing might be considerably varied from that of the constructional stuff, the purists might perhaps say that it would then be equivalent to an inorganic or decorative addition, and would therefore be no more admissible than a facing of stone. Yet it would certainly be more homogeneous, and ought therefore to escape easily the charge of mongrelism."

Colouring Cement. The colouring of cement facing mixture is easily effected, and Mr. H. G. Richey has drawn up a table showing the colouring matter and the amount to be employed. For black, he uses 45 lb. of manganese dioxide to the barrel of cement; for brown, 5 lb. of best roasted iron oxide; or 15 lb. of 20 lb. of brown ochre; for blue, 19 lb. of ultramarine; for buff, 15 lb. of ochre, which will considerably reduce the strength of the mixture; for green, 23 lbs. greenish-blue ultramarine; for grey, 2 lb. of bone-black; for red, 22 lb. raw iron oxide; for bright red, 22 lb. Pompeian or English red; for purple, 20 lb. of Prince's metallic; or violet, 22 lb. violet iron oxide; for yellow, 22 lb. of ochre. Common lamp-black and Venetian red are prohibited as being liable to run and fade. Any colour that is used should be made deeper than the required tint, as it will bleach lighter on drying. The colouring matter is mixed dry with the cement and the sand, the latter being first made thoroughly dry.

Reinforced Concrete Construction. In "A Specification of Reinforced Concrete, with General and Preliminary Clauses" (Witherby and Co.; 3s. 6d. net), the compilers, Messrs. A. Alban H. Scott and Percival M. Fraser, state that it is the outcome of many years' experience and study of reinforced concrete work of a very varied descrip-

tion, and that a large amount of work has been carried out under its stipulations. Clause 35 of the General and Preliminary portion excites a sardonic smile: "The word 'best' when used in the specification shall be taken in its ordinary English sense, notwithstanding any trade custom to the contrary"—a stipulation that certain contentions in the law courts have shown to be necessary. With respect to clauses 8 and 8a, it is not quite clear why it should be stated that one or the other is to be deleted. Clause 8 reads: "The contractor is to be responsible for the whole of the work, and he is not relieved from this responsibility by compliance with the specification and the drawings." Clause 8a reads: "The contractor is to be responsible for and make good all inherent defects manifesting themselves within a period of —, after the completion of the work, and is to allow for maintenance for the same period, fair wear and tear and damage by *force majeure* alone excepted." The one does not seem to exclude the other. The exception of *force majeure* will commend itself gratefully to those contractors who remember conditions of contract in which they were to be held responsible for "the act of God or the King's enemies." The specification is likely to prove exceedingly useful to all who are in any way engaged in reinforced concrete construction.

Testing Cement In a book that is just to hand from Messrs. Constable and Company, 10, Orange Street, Leicester Square, W.C. (price 6s. net), there is a useful chapter on the testing of cements, reinforced concrete, and stones. The book is entitled "A Handbook of Testing Materials," and its author, Mr. C. A. M. Smith, M.Sc., in the chapter mentioned, rightly considers that, in the case of reinforced concrete, only those results obtained on full-size constructional members can be assumed to give reliable results, and he therefore confines his attention to tests for such fundamental properties as the co-efficient of elasticity, the adhesive force of iron bars, and the crushing strength, but he judiciously adds an account of a full-size test of a floor—that of the town mansion at the corner of Grosvenor Square and North Audley Street, W., of which house Messrs. Read and Macdonald were the architects, Messrs. Holloway Bros. being the building contractors, who, under the direction of the architects, made, during six successive days, a careful series of load tests. The loading was by means of bricks, and of bags of Portland cement. The maximum deflection under double the normal super-load of 84lb. per sq. ft. was only 0.139in., calculated over the central 14ft. portion of the beam, or 1-1210th of the span. "No records," the author states, "were taken of the settlement at the supporting walls, so it would not be fair to regard the maximum deflection of 0.22in. as having taken place in the floor itself; but, adopting that value for the sake of argument, it will be seen the proportion is only 1-1060th of the entire span, or less than one-half the proportion generally allowed by architects." What is even more noteworthy is the elasticity of the floor, which, on the removal of the loading, returned to virtually its original form. Valuable tables and diagrams are included in this chapter of a book that, while it is primarily intended for professors and students in technological institutions, will be found to be exceedingly useful far beyond those limits.

ELECTROLYSIS IN CONCRETE-EMBEDDED METAL.

A series of experiments made during the past year on strips of metal embedded in concrete and subjected to an electric current have in general corroborated similar results obtained by various investigators. The tests, however, were followed by one in which both a steel rod and a carbon rod were embedded in concrete blocks and subjected to current with the purpose of proving or disproving some of the theories advanced to explain the disruptive action. These tests were reported by Mr. Cloyd M. Chapman, engineer in charge for Westinghouse, Church, Kerr and Company, to the American National Association of Cement Users.

A series of steel plates about 1-16 in. thick, 2 in. wide, and 6 in. long were embedded in concrete blocks. These plates had been previously painted with two full-flowing coats of paints of various kinds. In each concrete block were placed eleven plates, ten of which were painted and one uncoated. The purpose of painting the plates was to seek a proper protecting medium for steel exposed to these conditions, but the results, so far as they have to do with protective coatings, are not reported here.

The concrete blocks were about 6 by 6 by 14 in. They were made of dense concretes, using a mixture of samples of good brands of Portland cement, and, for the coarse aggregates, crushed limestone, crushed granite, gravel and cinder. Two sets of blocks were made up. They were made of the same mixtures, and in them were embedded plates coated with the same paints. The one difference in the treatment of the two sets of blocks was that a small electric current was passed through the plates in the one case and not in the other. In both cases the blocks were kept standing in a shallow metal pan of water to keep the concrete damp.

All the plates were connected in parallel to the source of the current, and the direction of flow of the current was from the plates through the concrete to the metal pan. The voltage was maintained at about ten by means of a lamp bank. The total current flowing was less than 0.2 amp.

The first effect apparent on the blocks subjected to electrolysis was the appearance around the plates where they entered the concrete of small brown globules or bubbles, apparently of iron oxide. These may have been caused by the escape of small quantities of gas liberated by electrolytic action on the surface of the plate down in the concrete, which has travelled up along the plate, and, carrying iron oxide with it, has left a deposit of rust where the gas escaped on the surface.

This excrescence made its appearance after one to three weeks, and gradually increased. Its amount seems to be proportionate to the amount of corrosion taking place on the plate about which it forms. Those plates which corroded very little showed no such excrescence as those which were badly affected.

The next noticeable effect was a very fine hair crack on the top of the concrete block, extending from one or both edges of the plate outward. Gradually this hair crack grew until it reached the sides of the block, and finally the block split

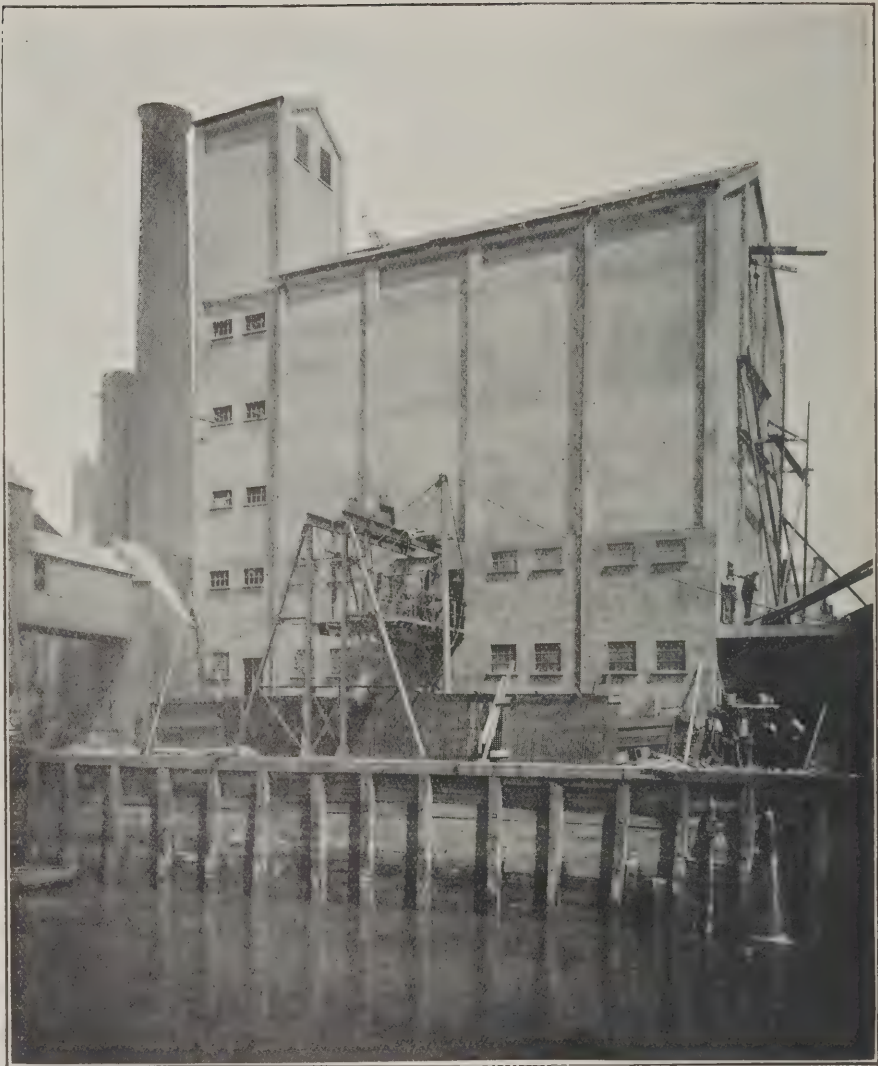
through completely. This bursting of the block has occurred only in cases where the corrosion has been very bad, and has taken place at periods ranging from a week to three months or more after current was turned on. The tests were continued until the blocks began to crack and split. They were then broken open and the plates removed.

These results took place only in the set of tests which were subjected to the electric current. The other set showed no change in appearance whatever on the outside of the concrete block. In these, the plates were all free from rust or corrosion except at the point where they entered the concrete, and where the metal was subjected both to the moisture of the concrete and to the air. Here and there appeared some slight rusting. The concrete was all sound and hard.

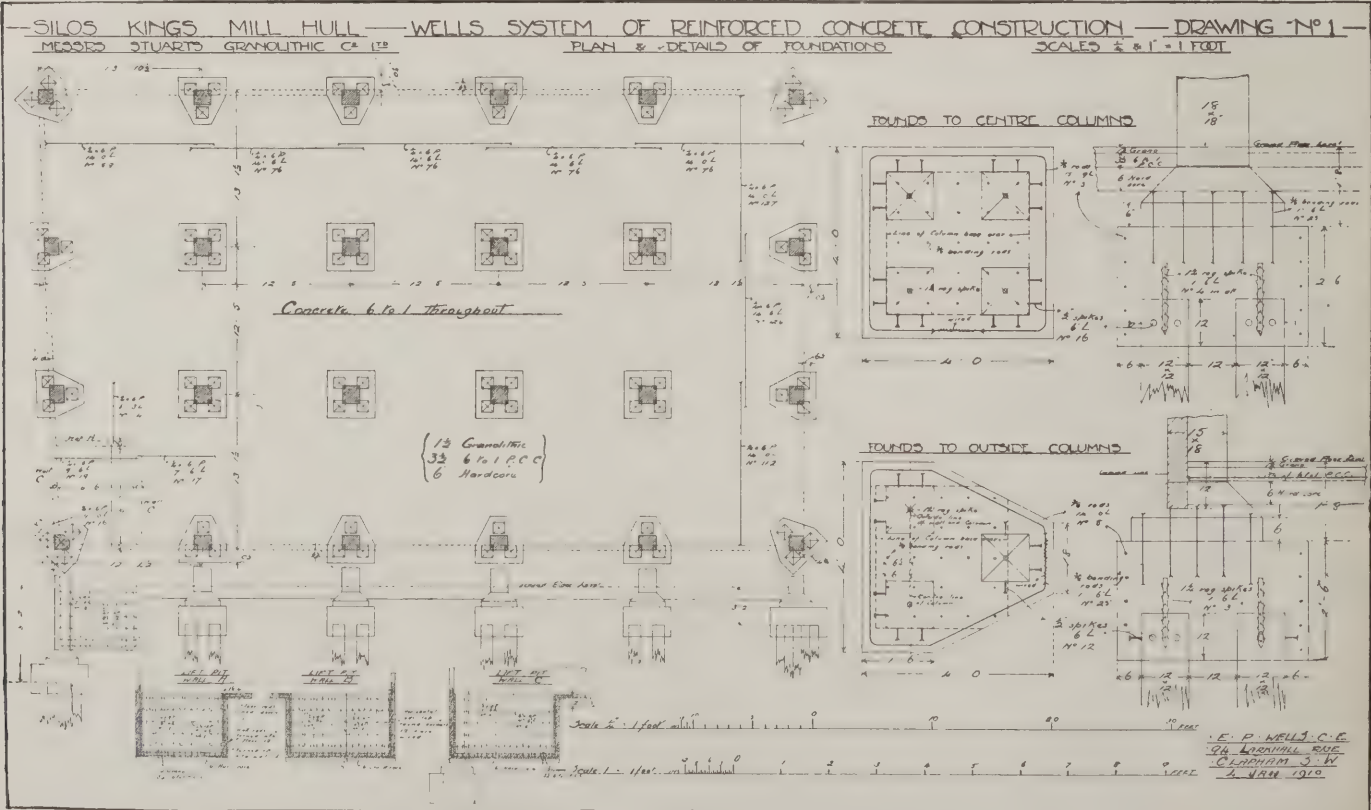
In the case of the blocks subjected to the electric current the corrosion of the metal was very marked, and the plates were deeply pitted. The denser blocks were broken in many places, while the porous cinder concrete block was still sound and whole, although the corrosion of the metal was as marked as in the other cases.

In one of these blocks, after two months' exposure, cracks had developed at seven of the eleven plates. When the cracked blocks were broken apart, the concrete was found to be hard and sound except immediately adjacent to the metal plates, where the concrete seemed slightly softer to a depth of perhaps 1-16 in. There was no appreciable spreading of iron rust along the fracture, which showed clean, fresh concrete except for some discoloration extending very slight distances from the metal, 1-8 in. or less.

As to the cause of this rupture of the concrete, five different theories have been offered, as follows: 1. Expansion of the metal due to change in its chemical nature. 2. Hydrostatic pressure. 3. Pressure of liberated gases. 4. Internal heat-



SILOS, KING'S MILL, HULL.



ing and consequent expansion. 5. Expansion of metal due to corrosion.

It will be noted that only one of these theories, the last one, depends upon the presence of a metal. Each of the others would hold equally well if some non-metallic conductor were embedded in the concrete and a current passed.

In order to get further evidence as to which of these five explanations is the nearer correct, the following experiment was carried out. Two 6 in. cubes of dense concrete were made up, in one of which was embedded a 1/2 in. round iron rod and in the other a 1/2 in. round carbon rod. Carbon was chosen because under the temperature and conditions it would not oxidise nor swell appreciably; yet it would transmit current to the heart of the concrete block just as the iron rod would and offer little resistance. Electrolysis would take place on the surface of the carbon as it would on the surface of the iron, gas would be formed in the one case as in the other; in fact, the only important difference in the action between the carbon and the iron rods, for the purpose of this investigation, is the fact that the iron oxidises or rusts under these conditions, while the carbon remains passive and unaffected. These two blocks were then connected up in parallel and a current passed through them. There was no rise in temperature which the hand could detect. A difference of potential of about ten volts direct current was maintained on the two blocks. In just one week the block containing the iron rod burst, and after a period of over two months the block containing the carbon rod was apparently as sound as ever. The voltage was then raised to 30, and two days after to 50, with no apparent effect.

In the light of these results the theories enumerated above may be examined to ascertain which of them seems to most fully explain the phenomena described.

The theory that the cracking is caused by the expansion of the concrete due to change in its chemical nature may be answered with the statement that with the carbon electrode the same gases would be liberated and the action of these gases upon the concrete would be the same; therefore the concrete should have burst as surely with the carbon rod as with the iron rod. The fact that this was not the result throws doubt upon this theory.

The second theory is that an hydrostatic pressure is produced at the anode which ruptures the block. If this were true when iron is used, there appears no reason why it should not be equally true when a carbon electrode is used, and a theory which does not explain this discrepancy is defective.

Of the third theory, which accounts for the cracking by the presence of a gas pressure at the anode, the same answer applies, namely, that the gases are liberated by the carbon rod as by the iron rod.

The next or fourth theory mentioned is to the effect that the current heats up the concrete internally and the consequent expansion bursts the block. The reply again is that this heating by current is in no way peculiar to an iron electrode, and therefore the block containing the carbon rod should burst as quickly as the one having the iron rod. Even the increase in voltage from ten to fifty, with the consequent increase in current passing, and in the heat generated, apparently had no effect on the block, though the iron burst its block in one week at ten volts.

The fifth or last theory, which is the one most commonly advanced, seems to explain more completely the phenomena noted. It is well known that iron rust occupies more volume than the original metal from which it was formed, and, as the rust which forms on iron subjected to the conditions here described must find space for itself, a great internal pressure is set up as the amount of rust increases until the enclosing and confining concrete gives way. This great internal pressure also explains the partial breaking down, or crushing, or softening, of the layer of concrete immediately adjacent to the metal. Part of the paint on the plates adhered to the concrete. Where the plate was unpainted and the corrosion was very rapid, there was no spreading of the iron oxide away from the plate, although some rust adhered to the concrete when the plate was removed.

Cement Kartel in Bohemia.

The North Bohemian cement factories have decided to form a syndicate, which is to enter into kartel relations with the German cement unions in Silesia and South Germany. An arrangement has been arrived at among the German cement unions concerning the export trade, whereby free competition as regards prices has been given more scope, especially in the matter of the oversea trade.

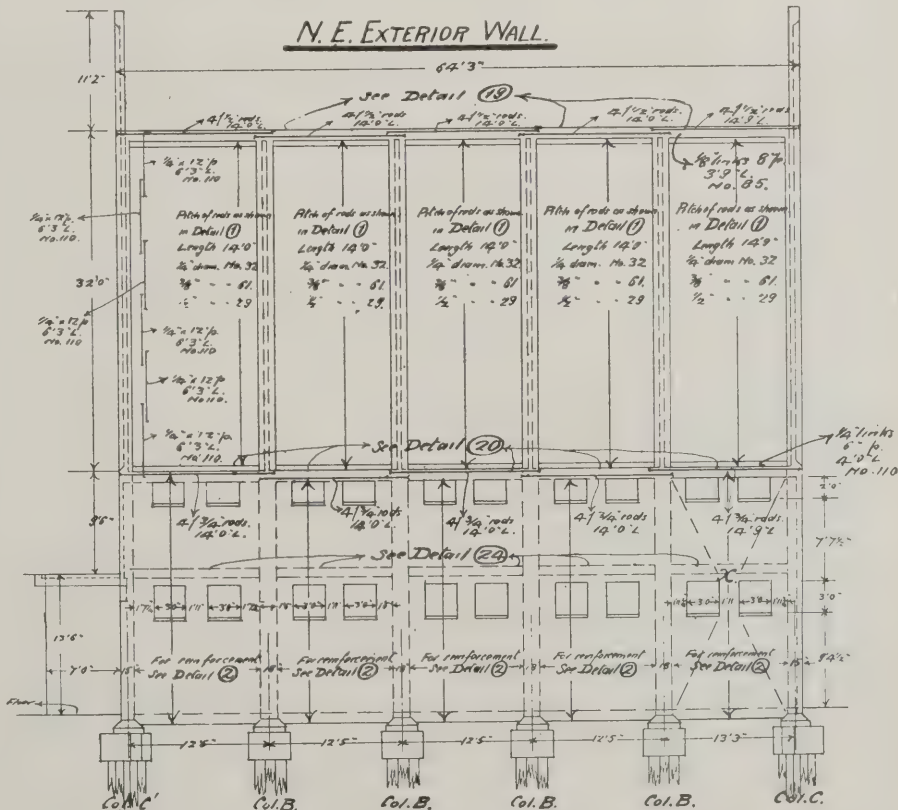
Silos, King's Mill, Hull.

The design of reinforced concrete silos offers many points of interest, both from the architectural and the constructional point of view, and within recent years many striking buildings of this kind have been erected. The accompanying illustrations of silos at King's Mill, Hull, are interesting as an example of design frankly expressive of the internal arrangement, the constructional lines being unrelieved by any decorative treatment. The work has been carried out by Messrs. Stuart's Granolithic Co., Ltd., on the Wells system, the details of which can be studied from the drawings, which are self-explanatory.

REVIEWS AND MAGAZINES.

The most interesting article in the *Art Journal*, from our point of view, is that by Mr. Pemberton on "Some Modern Pottery," as the large number of illustrations appended to it show something of what is being done in artistic pottery in this country at the present moment, for the artists whose work is illustrated are all English. The series is a satisfaction as showing that there is a great deal of really artistic work of this class now being carried out. Conventional foliage enters largely into the designs. Among the best things we are glad to notice two fine boldly designed bowls by Mr. Thackeray Turner; other good designs are by Miss E. Mullins and Mr. W. Moorcroft. Mr. Lewis Hind, in continuing his essay on "The Glamour of Landscape," shows an interesting collection of works by early painters, Italian and Dutch, illustrating the importance which landscape background occupied in the composition of their pictures of sacred subjects. The frontispiece to the number is a really beautiful reproduction in colour of Mr. Clausen's "Sons of the Soil," in which the characteristic iridescence of this painter's distances is well preserved. Another separate plate is the Bridge at Albi, with the fortress-like cathedral standing up in the distance; from a picture by Mr. Oliver Hall.

The *Burlington Magazine* makes the incident of the sale of Rembrandt's "Mill" the occasion for an attack on the Trustees of the National Gallery for not having taken any steps, on lines before suggested in the same Magazine, for accumulating a fund on which they could draw for large sums immediately wanted for the purchase for the nation of pictures of the first value which would otherwise be lost to the nation. We agree that something of this kind might and ought to be done, but it is hardly fair to base the criticism on the incident of the "Mill." The price offered by the American millionaire who wanted (apparently) the kudos of possessing Rembrandt's finest landscape was a pre-



SILOS, KING'S MILL, HULL.



The *Burlington* contains a long article, translated from the German of Herr Loewy, on the question whether the draped figure of a Daphnephoros known as "the Anzio Statue" represents a man or a woman. It is an answer to the judgment of the learned English archæologist, Mrs. Strong, who maintains that the figure is that of a young man, Herr Loewy holding the opposite view. The article introduces a good deal of interesting criticism on characteristics of Greek sculpture generally. The two photographs of the statue assist one's judgment very little; in the view seen from the right it suggests a female head and body, in the view seen from the

The *Gazette des Beaux-Arts* contains a short article by M. Alphonse Roux on the tomb of Diane de Poitiers, at the château of Anet; a restoration of which is made by M. Roussel, from fragments preserved at Versailles, aided by a drawing in the Cabinet des Estampes at Paris. The restoration represents the figure of Diane kneeling on the top of a sarcophagus supported on the heads of sphinxes, which in turn rest on pedestals. M. Roux, the writer of the article, thinks it possible that all the various portions of the monument are in existence at Versailles, but in a scattered condition, and that search should be made for them.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Timber Stagings in Westminster Abbey.

Mr. George Terrell asked Mr. Dudley Ward as representing the First Commissioner of Works, whether in view of the timber stagings which were being erected in Westminster Abbey, precautions were being taken against an outbreak of fire.

Mr. Dudley Ward, in reply, said that full precautions were being taken. A fireman was on duty by day and night, in addition to the fireman of the Abbey. Telephonic connection had been established with the London Fire Brigade. An officer of the Brigade had inspected the Abbey and had expressed himself as satisfied with the arrangements.

Appeals from the Housing and Town Planning Act.

Mr. Cassel asked the President of the Local Government Board whether, in view of the fact that the reports of the inspectors appointed by the Board to hold local inquiries in regard to appeals against closing and demolition orders were treated by the Board as confidential and not open to the inspection of the appellant, and in view of the fact that at present there was no appeal from the decisions of the Board to any court of law, he would be prepared to support or initiate legislation allowing an appeal to the High Court of Justice.

Mr. John Burns, in reply, said he was not prepared to support or initiate legislation of the character referred to. So far as any question of law might arise in the course of an appeal to the Board under the Housing, Town Planning, etc., Act, 1909, provision was made by the Act under which the question might be required to be stated for the opinion of the High Courts.

Mr. Cassel asked the President of the Local Government Board whether the Board, before revising or setting aside the report of an inspector appointed to hold a local inquiry in regard to appeals against closing or demolition orders, made any independent inspection of the premises.

Mr. Burns replied that the appeal was made to the Board and the Board decided it after carefully considering the whole of the facts before them. The honourable member might assume with perfect safety that the Board would take any necessary steps to secure a knowledge of the facts.

Mr. Burns further informed Mr. Cassel that the inspectors who held local inquiries in regard to appeals against closing and demolition orders were appointed under the Local Government Act, 1871, which governed generally the appointments to the staff of the Board. Their appointments were permanent. They were appointed by way of addition to the staff of inspectors, and their appointment in that capacity was not limited to cases of appeals under the Housing, Town Planning, etc., Act. They were paid by salary.

CORRESPONDENCE.

Cleaning Terra-Cotta.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your issue for April 12th "Subscriber," Birmingham, asks for particulars of some preparation for cleaning terra-cotta. With reference to this, we would mention that the Brikston Cleaning Co., of 88, Colmore Row, Birmingham, have cleaned for us (with a preparation of

an acid nature) the fronts of some old workshops, so that the old bricks almost match the new ones used in repairs. The firm, however, are careful to keep the nature of their process to themselves.

W. STREET AND SONS.

Birmingham.

Dry Rot in Floors.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the "Journal" for April 5th you make reference to the dry rot which has occurred in the wood floors of Naburn Asylum, and the surveyor's and engineer's reports that it commenced in the joints bedded in the concrete. Possibly "joints" should read "joists,"* and that the latter were the dove-tailed wood pieces which are sometimes bedded in the concrete to nail the floor boards to. In Mr. Potter's paper, read before the Concrete Institute in December, attention was called to the fact that these invariably rot sooner or later, no matter whether exposed to heat or not. As floors have often been constructed in this way for many years past, and sometimes on an extensive scale, it is a serious matter, and my suggestion is that they should be examined to ascertain their condition with a view to a remedy, before it is too late.

S. P.

[*A printer's error. It should, of course, be "joists."—EDS. A. and B.J.]

The Architectural Association Exhibition.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I noticed with much pleasure in your issue of April 12th the review of the sketch exhibition at the Architectural Association premises. I would point out, however, that you ascribed it to the 1,400 members of the Association generally, whereas it represented the energies of some 150 only—the members of the A.A. Camera, Sketch, and Debate Club.

ALAN SNOW,

Hon. Sec., A.A. Camera, Sketch, and Debate Club.

NEW TECHNICAL INSTITUTE,
NEWPORT, MON.

This building, illustrated by the accompanying views and the two photographs reproduced as a centre plate in the present issue, has recently been completed from designs by the borough architect, Mr. Charles F. Ward, A.R.I.B.A. The principal entrance is at the corner of Clarence Place and Rodney Road through a portico embellished with eight Cornish granite columns. Access is obtained to an octagonal hall 24 ft. across, from which corridors lead to the art, engineering, and pupil teachers' departments. (The decision of the Secondary Education Committee to include a pupil teachers' centre for women somewhat changed the usual design for a building of this kind. The arrangement, however, is an economical one, as it avoids the duplication of science laboratories in the town, and the class-rooms are used during the day as well as in the evening.) The disposition of the rooms on the ground floor is shown on the plan on the next page. On the first floor rooms are provided for design, painting, clay modelling, etc., as well as mechanical, electrical, physiological, and biological laboratories, a large drawing-office for building construction and machine drawing, and a lecture-room for physics and other subjects. On the second floor are rooms for painting from the life, antique drawing, etc., and other laboratories and lecture-rooms; while the third floor, in the tower, is apportioned to the mounting of students' drawings, the space within the dome over the main halls being used as a tank room.

The building is constructed throughout of fire-resisting materials, and an effort has been made to minimise the collection of dust by rounding all corners wherever possible. The corridors have tile dadoes and terrazzo floors, and class-rooms have wood-block floors with teak skirtings.



Photo: G. Marshall Smith.

TECHNICAL INSTITUTE, NEWPORT: SCIENCE CORRIDOR, SECOND FLOOR.
CHARLES F. WARD, A.R.I.B.A., BOROUGH ARCHITECT.

Heating and ventilation is on the "plenum" system. Lighting is by electricity, the laboratory and other rooms having inverted arc lamps to reduce shadows and enable art students to carry out colour work in the evening classes.

Externally the building is of brick, with Bath stone dressings, and a Cornish granite base. It is carried on a concrete raft, reinforced with Expanded Steel, which material was also used for staircase, floors and ducts. Iron casements were supplied and fixed by Messrs. Henry Hope and Sons, of Birmingham.

The total cost of the building was £42,000. Mr. W. E. Blake, of Plymouth, was the contractor.

THE BLOCK OR THE COTTAGE.

The valiant defenders of the faith in the Scottish "tenement" houses—that is, block dwellings—are up in arms against a plea. In a paper read, during the recent town-planning exhibition in Edinburgh, by the Burgh Engineer of that city, for the construction of cottages as a change from the block dwellings in which the working classes are usually herded in the great cities of North Britain. The stock arguments in favour of the block dwellings, and the stereotyped objections to separate dwellings, are again marshalled in formidable array: "The tenement house is by far the cheaper, healthier, and altogether the better house," because it is cheaper as to first cost and maintenance, wherefore the rent is lower; cheaper as regards road-construction, sewers, water and gas mains, scavenging and policing; healthier and more comfortable because, the walls being thicker, less heat is lost through the walls, while the majority of the dwellings, being above

the ground storey, are dry and free from damp rising through the walls from the ground, and the dwellers are living above the stratum of damp atmosphere in contact with the ground; and the houses being also above the dust which, laden with microbes, is blown by the wind into the houses on the ground level, the atmosphere is purer and better for the inmates. With regard to cottages, we are told that, besides all the disadvantages implied in the praise of the block dwelling, brick buildings with thin walls, small compartments, "somewhat after the style to be met with in a better-class colliery row, but with thinner walls, would be quite unsuitable for the cold climate and east winds of Edinburgh." Even the proposed cottage garden would be a fearsome enterprise. It would be neglected, and would therefore become "a nuisance and a menace to health through the decaying vegetable matter." It is impossible to yield entire assent to any one of these specious allegations. Even the question of relative cost is quite open to argument; and the rooms in block dwellings are by no means invariably larger than those commonly found in cottages. The assertions as to relative healthiness have no foundation in fact. Selected block dwellings are sometimes able to show a slightly lower death-rate than the general average, but that is only another example of the elasticity of figures; and bricks are held by the faculty to be a far more healthy building material than stone, because they "breathe" more freely, and do not "sweat" nor retain dampness as stone does. Also a direct negative has been proved with respect to the supposition that the higher the building is, the purer is the atmosphere. There are those who hold that the exact contrary is the case,

the higher storeys receiving both the dust that is blown up and the smoke that is blown down. The "garden-nuisance" argument rather suggests the auctioneer's damaging admission that the only drawbacks to the dwelling he had lavishly praised were the nuisance arising from the frequency with which the paths had to be swept clear of rose-petals, and the annoyance that arose from the perpetual trilling of nightingales. But other things being equal, we should unhesitatingly plump for the cottage.

SIR GILBERT SCOTT'S HOUSE.

The London County Council, in pursuance of its policy of indicating houses of historical interest in the Metropolis, has fixed a tablet on "The Grove," Hampstead, the residence of Sir George Gilbert Scott. Scott had four houses, at various times, in London, but the Council have chosen that at Hampstead as the most suitable. While he was residing here the two chief works which occupied the architect were the erection of the Foreign and India Offices in Whitehall, and the preparation for the Albert Memorial. In view of the storm of criticism levelled at the latter, it is interesting to record that on March 10th, 1864, Sir Gilbert wrote that the special characteristic of his successful sketch "was that the ciborium was designed in some degree on the principles of the ancient shrines. These shrines were models of imaginary buildings such as had never in reality been erected; and my idea was to realise one of these imaginary structures, with its precious materials, its inlaying, its enamels, etc. This was an idea so new as to provoke much opposition. Cost and all kinds of circumstances aid this opposition, and I as yet have no idea how it may end."

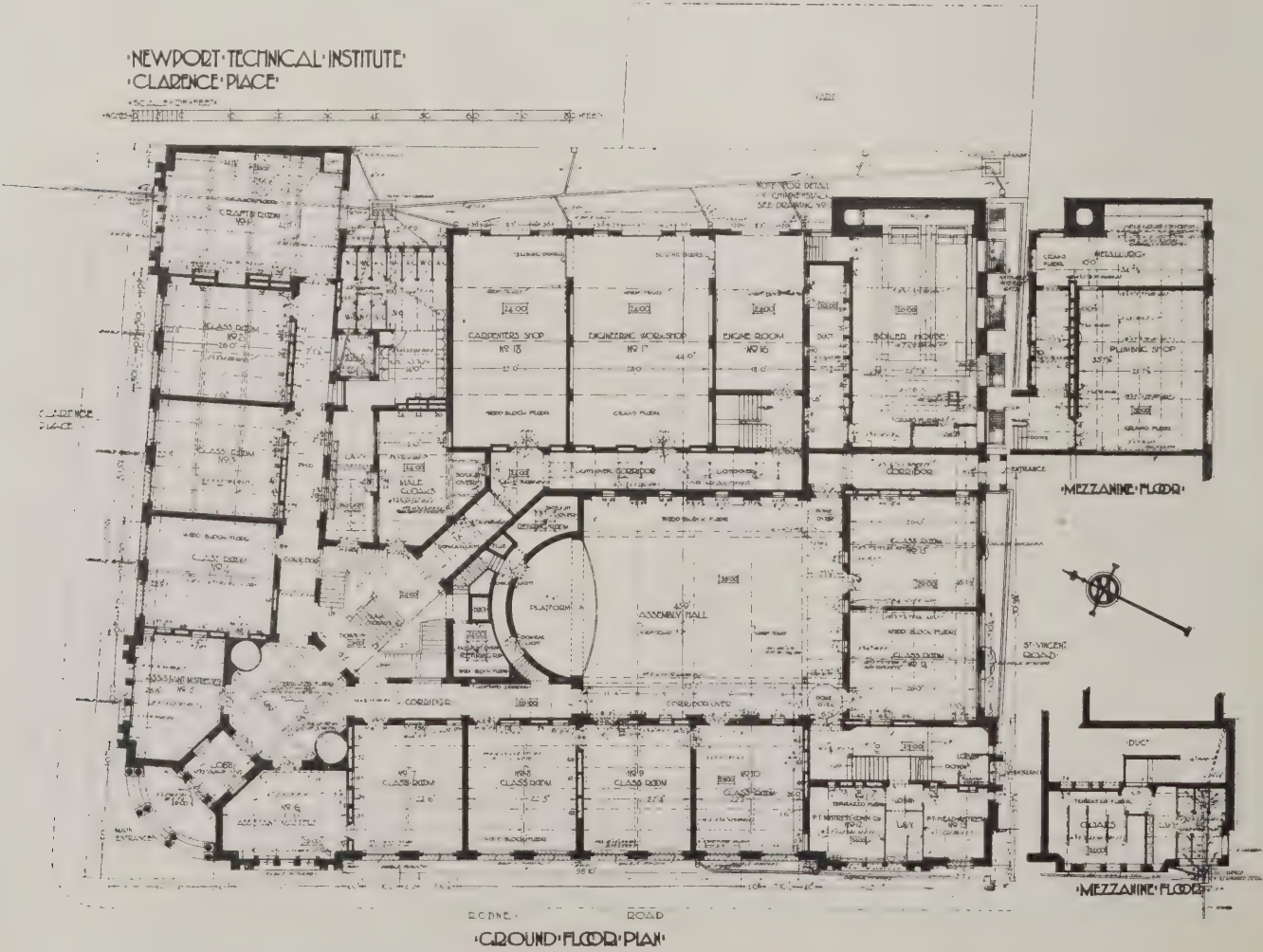




Photo: G. Marshall Smith.

TECHNICAL INSTITUTE, NEWPORT: THE ASSEMBLY AND LECTURE HALL. CHARLES F. WARD, A.R.I.B.A., BOROUGH ARCHITECT.

NEWS ITEMS.

A Memorial.

An alabaster memorial, designed by Mr. Edmund Sedding, has been placed on the west wall of the south aisle in St. Alban's, Holborn, to commemorate the late Ven. Alfred Carnon.

Fire at a Joinery Works.

The steam joinery works of Messrs. W. Lawrence and Son, building contractors, Sawbridgeworth, were burnt down on Easter Tuesday, the damage being estimated at several thousand pounds. Incendiarism is suspected, as the works had been closed down for the holiday since Thursday.

Road Construction Experiments.

The Road Board have made arrangements for the laying down of experimental lengths of road surface, to be constructed by various methods in different materials, at the cost of the Road Board, and under the general direction of their engineering advisory committee. The experimental lengths selected, each of which will cover approximately 1,000 superficial yards, are upon the London-Folkestone road between New Eltham and Sidcup.

Hospital of St. Cross, Winchester.

The trustees of the Hospital of St. Cross, Winchester, have accepted the tender of Messrs. Thompson and Sons, of Peterborough, the builders engaged upon Winchester Cathedral, for the re-conversion of the master's old house in the quadrangle into ten more dwellings for brethren under the scheme approved by

the Charity Commissioners. This house was occupied by brethren in pre-Reformation days. The number of brethren is to be increased to 27, a figure never contemplated by the founder, Bishop Henry de Blois. But of late the revenues of the Hospital have greatly increased. In ten years they have nearly doubled, and next year will be close upon £8,000.

Lord Kitchener's Kent Residence.

Lord Kitchener has purchased Broome Park, an early seventeenth-century mansion, and 550 acres, between Canterbury and Folkestone. The mansion was erected in or about the year 1636 by Sir Basil Dixwell, after the style, if not from the actual design, of Inigo Jones. It was enlarged and improved in 1778 by James Wyatt, who added the drawing-room with its semi-circular end.

Statue of John Hampden.

As an anonymous Coronation gift an offer has been made through Mr. Thomas Field, a member of the Bucks County Council, to present a life-size statue in bronze of John Hampden, provided it is erected in the market square of Aylesbury, the county town of Bucks. The proposal has the full approval of the County Archaeological Society, of which the Earl of Rosebery is president. The design for the statue will be entrusted to an eminent sculptor.

The Transformation of Tabard Street.

A Local Government Board inquiry into the scheme for the clearance of Tabard Street, London, S.E., is being held to-day

at the Southwark Town Hall. The area to be cleared is about sixteen acres in extent, and at present is covered with dilapidated slum property. It will be re-planned, and an open space and block dwellings provided, while a portion of the estate will be utilised for commercial purposes. The number of persons whose re-housing has to be considered is about 4,550, of whom, it is expected, about half will be accommodated in the new buildings. The net cost of the scheme will be £387,000.

Doncaster Housing Scheme Disapproved.

The Doncaster Corporation had a large housing scheme under consideration recently, and applied to the Local Government Board for permission to borrow £31,500 for the erection of 138 working-class dwellings. The town clerk has now received a reply to the effect that the Board, after careful inquiry, are of opinion that, considering the expense that would be entailed, and other matters connected with the proposed scheme, it is not desirable to approve the application.

The Work of the Morant Club.

The Morant Club, in their first annual report, record a very active year's work. This included the opening-up of the large conical mound standing in the grounds of the Manor House at Lexden, two hitherto-unrecorded prehistoric sites near Rayleigh, two remarkable groups of mounds on the marshes near Maldon and Hull Bridge, respectively, and, particularly, the excavation of the site of the ancient abbey of Barking, Essex, which work was superintended by Mr. A. W. Clapham.

The chairman of the Morant Club is Mr. Henry Laver, F.S.A., of Colchester, and the hon. secs. are Mr. Miller Christy, 115, Farringdon Road, E.C., and Mr. Fras. W.W. Reader, 5, Lamb's Conduit Street, W.C.

* * *

A New Book on School Planning.

A volume on school planning, by Mr. Philip A. Robson, A.R.I.B.A., is to be published shortly by Mr. Nicholson-Smith, price 15s. nett. It is of an essentially practical nature, and will include about 100 illustrations. The illustrations deal largely with types of secondary schools, as the author considers that the elementary schools are better understood than those for higher grades. He has, however, devoted a special chapter to the interesting schools designed by the architect to the Derbyshire Education Authority.

* * *

Remarkable Excavations in Corfu.

The head of the German Institute of Archaeology in Athens, Professor Dorpfeld, who arrived in Corfu on April 18th in order to visit the excavations at Garitza, is reported to have said that in the course of nearly 30 years' experience he had never come across a discovery of antiquities of such interest or in such a well-preserved state. Professor Dorpfeld considers that the remains which have been brought to light belong to a temple of the seventh century B.C. He expects a rich harvest of further discoveries from the hitherto unexplored area above Garitza.

* * *

A New Earl's Court Exhibition.

About 3,000 workmen, mostly drawn from the local Labour Exchanges, are working on the new Earl's Court Exhibition, which will be opened on May 10th. The canvas for the scenery is three miles in length, its average height is 30 ft., and twenty artists have been employed for many weeks painting it. Considerable changes have been made in the old grounds, to effect which 20 miles of timber, 1,000 tons of steel, 10 tons of glass, 5,000 tons of cement, 600 tons of metallising gravel, and quantities of other materials have been used.

* * *

Bell's United Asbestos.

The directors report for the year ended December 31st last that the result of the year's operations is a net profit of £16,954, to which has to be added the amount brought forward, £14,168, giving a total of £31,122. The interim dividend paid on August 13 absorbs £6,000, leaving for appropriation £25,122. Experiments extending over a long period, it is stated, have resulted in the establishment of a new department for the manufacture of asbestos Portland cement roofing tiles and wall and ceiling sheets under a somewhat similar, but improved, method to that known as the "Hatschek" process. The response to the efforts to produce these materials for the first time in England, under the trade-mark "Poilite," has been fully equal to the expectations of the board, and as the sales already exceed the capacity of the company's factory, the directors have sanctioned further expenditure on additional buildings and plant which are necessary to meet the increasing demand. The directors recommend the payment on May 4th of a dividend of 1s. 6d. per share on shares numbered 1 to 120,000, inclusive, which, with the interim dividend of 1s. per share paid on August 13 last, makes a total distribution of 12½ per cent. for the year. The sum of £16,122 is carried forward.

COMPETITIONS.

New Municipal Buildings and Proposed Town Hall, Coventry.

We publish on p. 416 of this issue the first premiated-design, numbered 31 (by Messrs. Garratt, Simister, Buckland, and Farmer, of Birmingham) in the above competition. The design placed second is by Messrs. William E. Couch, A.R.I.B.A., and H. T. Benjamin Barnard, of Westminster; and that placed third by Mr. Herbert J. Rowse, of Liverpool; 130 designs were submitted.

Mr. E. Guy Dawber, in his award, says: "The problem was not an easy one to solve, and, as a consequence, it has produced a series of designs greatly varying in merit. The instruction to competitors that 'the Council felt strongly that the new building should harmonise with the character of the old' somewhat hampered the independent treatment of the subject, and competitors have either dealt with it in a so-called Gothic spirit, or have thrown this aside and designed their buildings in the freer classic style of the day. The site is a somewhat difficult one to deal with, as the municipal offices, having to occupy the entire frontage to Earl Street, necessitated the buildings being spread out, and tended to the multiplication of corridors leading to the various departments. The number and variety of these departments and their grouping and relationship to each other, all constituted an important factor in any decision upon the merits of the respective plans.

"The author of design marked (31) submits an extremely well thought out scheme for both the municipal offices and the town hall. The plan is admirably arranged, and is most economical, the corridors are few and short, and there is no wasted space; each department has been kept distinct and self-contained, and the municipal offices can be erected quite independently of the Town Hall and do not encroach unduly upon the Hay Lane frontage.

"The elevations have been broadly treated with a certain amount of Gothic feeling, simple yet monumental in character, which would harmonise well with the style of the old buildings in the city, and, in my opinion, the whole scheme is by far the best one submitted in the competition. I further consider that the second best design is that numbered 104, and the third that numbered 76.

"Messrs. Stoner and Sons, quantity surveyors, of London, have checked the cubic contents of all three designs, and whilst they are of opinion that the scheme submitted for the municipal offices numbered 31 could be built for the sum stipulated, yet they think a somewhat too sanguine view has been taken of the cost of the town hall, but this would depend upon the character of the building as worked out in detail.

"I therefore advise, subject to the fulfilment of the conditions and instructions to competing architects, that the author of design No. 31 be appointed architect to the new buildings, and receive in addition the sum of £150; that the author of design No. 104 be paid a premium of £175; and the author of design No. 76 receive a premium of £125."

King Edward Memorial Statue, Bristol.

Of the twenty sketch models submitted for the King Edward memorial statue to be erected in Bristol, that of Mr. Henry Poole, London, S.W., has been placed first by Mr. E. A. Rickards, F.R.I.B.A., advisory architect, and Mr. Derwent Wood, A.R.A., assessor. The statue will be 8ft. 6ins. high, on a pedestal having panels filled with designs emblematic of the peaceful reign of the late Sovereign.

Central Library, Deptford.

The twelve competing architects selected to compete have been informed that June 21st is the latest time for sending in the designs.

Baths, Liverpool.

The Finance Committee of Liverpool Corporation, having considered a scheme for erecting baths at the pier-head, have decided to invite competitive designs for the elevations, for which premiums of 100, 50, and 25 guineas are to be offered. The cost of the scheme is estimated at £70,000.

LIST OF COMPETITIONS OPEN.

MAY 1.—LIBRARY AND ART GALLERY, MANCHESTER.—For particulars apply to Manchester Corporation.

MAY 5. STREET IMPROVEMENT, SWANSEA.—Architects are invited to submit competitive designs and estimates for Castle Street improvement. Block plan and particulars on receipt of one guinea deposit, to be returned to competitors who fulfil the conditions. Premiums: Not exceeding £250 for the architect appointed to prepare the working drawings; £50 to author of design placed second. Mr. S. S. Reay, F.R.I.B.A., has been appointed assessor. Apply Town Clerk, Guildhall, Swansea.

MAY 10. WARD FOR COTTAGE HOSPITAL, DEVIZES.—The ward is for six beds, and is to cost £1,200 to £1,500. Author of selected plans will be appointed architect. Premiums of ten guineas to author of second design. Particulars (10s. 6d., returnable on usual conditions) from Edward Thorp, Hon. Sec., Devizes Cottage Hospital Committee, Devizes.

MAY 15. COURT HOUSE, ETC., CHESTERFIELD.—Derbyshire Standing Joint Committee invite designs from architects practising in Derbyshire, for a new court-house and lock-up, to cost £8,000. Assessor, Mr. Frank Baggallay, F.R.I.B.A. Apply to Mr. George C. Copstick, L.R.I.B.A., County Offices, Derby. Deposit of three guineas for particulars.

MAY 26. LABOURERS' COTTAGES, BURSTOW.—The Trustees of Archbishop Abbott's School, Guildford, invite builders to submit competitive designs and estimates for the erection of a pair of semi-detached labourers' cottages, which they propose to erect on the Rookery Farm, Burstow. Designs, specifications, and estimates are to be delivered on or before May 26th to Humphry P. Smallpiece, Clerk to the Trustees, 138, High Street, Guildford.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and a fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

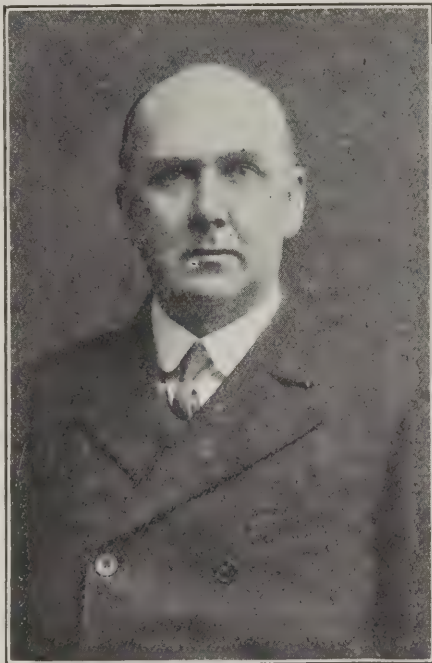
The Building Trades Exhibition.

The Building Trades Exhibition which was opened at Olympia on Saturday last, April 22nd, and will remain open until Saturday, May 6th, fully maintains the high standard of interest set by its forerunners, and is in every way worthy of "our greatest constructive industry." One great merit of the exhibition is that, while every available foot of space is occupied, there is nothing extraneous to that industry. Parties from the Architectural Association (Saturday), the Surveyors' Institution (Monday), and the Institute of Sanitary Engineers (Tuesday) have already visited the exhibition, and a list of further visits that have been arranged is included in our "Coming Events." In this issue we give an account of the opening ceremony, notices of many of the leading exhibits, and a series of articles, by authoritative writers, summarising the progress that has been made in the various departments represented, and indicating the present position. Further notices will appear in our next issue.

TO say that the present Building Trades Exhibition surpasses its predecessors in magnitude and in interest is perhaps to incur a charge of banality and a suspicion of insincerity; but mere justice impels one to hazard the assertion. If progress means anything more than merely moving in a circle, the latest exhibition ought to be the best, and we devoutly believe that it is; and this is the opinion that has been deliberately formed by one who has at least the qualification of having visited every one of the biennial series, of which this is the ninth.

For one thing, it is conspicuously better in its buildings, some of which would be libelled if they were called by the common name of "stands." They give a better *coup d'œil* when viewed from the galleries, and the favourable impression is confirmed on close and detailed inspection. It would be invidious, perhaps, to single out any of them for praise; but it may be safely said, without particularising more minutely, that there are some excellent samples of brickwork, and some highly creditable designs that have been conceived and executed with taste.

It is true that there are others which fall lamentably short of this praise; and the occasional defiance of all the canons suggests that it might be desirable (although probably it would not be practicable) to exercise some sort of architectural censorship over the designs, so that we might at least be spared the intrusion of erections that, without flattery, may be described as absolutely and gratuitously hideous. The structures that merit this description, however, are by no means



MR. LEONARD STOKES.

President of the Royal Institute of British Architects.

numerous, and their faults are rendered the more conspicuous by the notable advance in taste that is so generally observable when the exhibition is viewed as a whole.

Yet, while it is possible to say that the exhibition affords, in a way, a rough index to the present state of taste in building and decorating, as well as to present-day ideals of comfort and convenience, it must not be forgotten that the collection is in a certain measure fortuitous and, within certain well-defined limits, heterogeneous, and that its primary aim is practical and commercial. *Æsthetic* elements there are in abundance; but they must perforce suffer somewhat from the atmosphere of commercialism that rightly and necessarily pervades such an exhibition. One must not take into it the mood with which one visits an art gallery, nor even a model village, but should rather open upon it that "keen eye for business" which is appropriate to the bazaar and the marketplace.

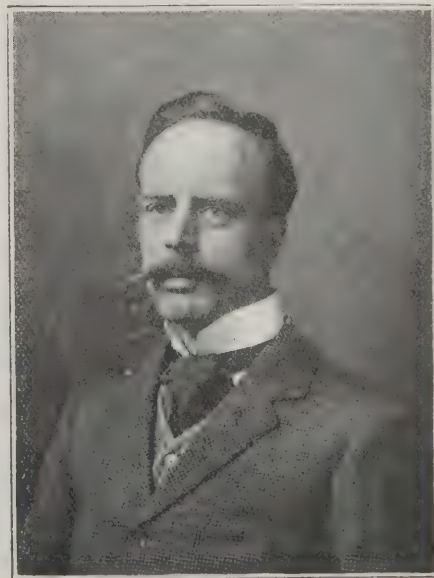
The value of the exhibition from a business point of view is indisputable. It is evident from the mere fact of its continuance with an ever-increasing growth in the numbers of the exhibitors, who this time, we understand, could not all be accommodated with the space they required, many of the stand areas having to be subdivided twice or thrice in order to

meet the demand of the several applicants for it. The steady influx of newcomers is itself significant; but still more striking is the continued appearance, time after time, of the old firms that came in at the beginning, and that have evidently found out by experience that it is well worth while to go to the trouble and expense of "being in it," as the expressive colloquialism puts it. They have acquired the all-important virtue of persistency and perseverance in publicity. They are aware that in any form of advertising, whether by displaying articles in three dimensions at an exhibition, or in drawing attention to them in the technical Press, constancy and reiteration are of the essence of success; and they know, also, that, in order to realise the fullest possible benefit from regular appearance at these biennial exhibitions, regular advertising in the intervals is an indispensable condition.

There is one very pleasant feature of the exhibition on which it is almost superfluous but quite delightful to dwell, and that is the opportunity it affords for the meeting of old friends, who, coming in from various parts of the country, and even from abroad, with the main object of seeing, handling, and comparing the many objects about which they may have read in the technical Press, are nevertheless, in many cases, actuated by the equally persuasive consciousness that their journey will almost certainly be rewarded in the matter of happy meetings and greetings, either by chance or by appointment; and thus the exhibition may be said to serve the threefold purpose of promoting business, education, and sociability.



MR. H. GREVILLE MONTGOMERY.



MR. H. C. MONTGOMERY.

Opening Ceremony and Luncheon.

The ninth biennial Building Trades Exhibition at Olympia was formally opened on Saturday last, Mr. H. Greville Montgomery, J.P., conducting the ceremony in the unavoidable absence of Mr. Leonard Stokes, who unfortunately was indisposed. A distinguished company of architects and others gathered at the main entrance of the building at 12.20, when, under the guidance of Mr. Montgomery, a brief preliminary inspection of the exhibits was made.

Returning, the visitors gathered round the Expanded Metal Company's stand, from the steps of which Mr. Montgomery explained that in consequence of the serious indisposition of Mr. Leonard Stokes, the duty of opening the exhibition devolved upon himself. He had had the pleasure of walking round the exhibition more than once already, and he believed he could say truthfully that it was a wonderful show. He had been connected with these exhibitions for something like 17 or 18 years, and had seen them all; and he had no hesitation in saying that this was the highest, the brightest, and best of the series. He then formally declared the exhibition open.

The company subsequently proceeded to the Pillar Hall, where luncheon had been prepared. No fewer than 160 guests were present, amongst whom were Mr. Ernest George, A.R.A., Mr. Mervyn Macartney, Mr. Arthur Keen, Mr. Louis Ambler, Mr. J. Alfred Gotch, Mr. C. Fitz-Roy Doll, Mr. G. H. Fellowes Prynne, Mr. H. C. Montgomery, Mr. William A. Pite, Mr. William Flockhart, Mr. Walter Cave, Mr. John W. Simpson, General Sir Alfred Turner,

K.C.B., Mr. Henry T. Hare, Mr. John Slater, Sir Henry Tanner, I.S.O., Mr. Edwin T. Hall, Mr. Edwin L. Lutyens, Mr. Gerald C. Horsley, Sir George Chubb, Mr. Frank Atkinson, Col. Sir Walter Olivey, K.C.B., Mr. Henry Tanner, Major H. P. Tavener Dickins, V.D., Mr. James S. Holliday, Mr. H. A. Campbell, Mr. G. Bird Godson, Mr. H. H. Statham, Mr. T. Raffles Davison, Mr. Matt Garbutt, Mr. Arthur T. Bolton, Mr. H. V. Lanchester, Mr. F. Dare Clapham, Mr. H. D. Searles-Wood, Mr. J. M. W. Halley, Professor S. D. Adshead, Mr. Maxwell Ayrton, Mr. Charles E. Bateman, Mr. Walter H. Brierley, Mr. Bernard Dicksee, Mr. H. P. Burke Downing, Mr. G. Leonard Elkington, Mr. H. Phillips Fletcher, Mr. Edwin Gunn, Mr. George Hornblower, Mr. E. J. May, Mr. Edward Monson, Mr. E. C. P. Monson, Mr. Winton Newman, Mr. E. Turner Powell, Mr. S. S. Reay, Mr. W. H. Romaine-Walker, Mr. A. H. Ryan-Tenison, Mr. R. Weir Schultz, Mr. W. J. Tapper, Mr. C. Harrison Townsend, Mr. H. Inigo Triggs, Mr. C. F. A. Voysey, Mr. A. Needham Wilson, Mr. Ian MacAlister, Mr. D. G. Driver, Mr. C. McArthur Butler, and many others.

At the conclusion of the luncheon, Mr. H. G. Montgomery, proposing the health of the King, observed that His Majesty had taken a lively interest in the fortunes of the Building Trades Exhibition, which he, in company with our present Queen, had visited upon two occasions—in 1907 and 1909.

The toast having been honoured to the accompaniment of the National Anthem,

Mr. Arthur Keen, F.R.I.B.A., in proposing the health of Mr. Montgomery, said that he understood this to be quite an in-

formal occasion that called for no protracted speeches. But in the absence of Mr. Leonard Stokes, which they all very much regretted, it had been suggested that he should tender to Mr. Montgomery their hearty thanks for making them his guests, and for the delightful luncheon which they had all enjoyed. He wished Mr. Montgomery all prosperity and success in the exhibition; but it went without saying that the exhibition would be a success. Their host had been connected with many similar exhibitions in the past, and each seemed to be better than the preceding one. By a casual inspection this present one seemed to excel all previous achievements. He offered them the toast of Mr. Montgomery's health.

The toast having been drunk with enthusiasm, the company singing spontaneously "For he's a Jolly Good Fellow,"

Mr. Ernest George, A.R.A., made a few observations, remarking upon the extraordinary amount of organisation involved in the exhibition, and alluding to the indications of a revival in trade.

Mr. Montgomery, in reply, said he felt that the proceedings were somewhat out of joint by reason of the absence of Mr. Leonard Stokes, who they all hoped would speedily recover from his indisposition. With regard to the possibility of a revival in the building trade, he himself was probably in a position to judge better than anyone else. He was able to say that there was a break in the overhanging cloud. The sign was a small one, no bigger, perhaps, than a man's hand, but nevertheless sure and distinct. He trusted that if they were spared, as he hoped they would be, to visit the exhibition in two years' time, they would be able to verify his prediction.



THE BUILDING TRADES EXHIBITION AT OLYMPIA: GENERAL VIEW.

MODERN CONSTRUCTION.

A BRIEF SURVEY OF PRESENT-DAY METHODS IN THE ERECTION AND EQUIPMENT OF BUILDINGS.

STEEL CONSTRUCTION FOR BUILDINGS.

BY S. BYLANDER

Since about twenty years ago, when steelwork was first used for high office buildings in America, the introduction of steel for buildings has advanced rapidly, and at the present time hardly any building is erected without some use of the material. This adoption of steelwork seems to have been forced upon the architect and builder by reason of several advantages. For instance, steel stanchions take up much less space than piers of brick or masonry, and steel girders can carry heavy loads over large spans, thus making the construction of large rooms easy, and generally giving the architect more freedom in design. Steel, too, is a trustworthy material, and constructions with it can be made fire-resisting.

The first complete steel frame in London was the Ritz Hotel, Piccadilly, which contains about 2,500 tons of structural steelwork. Many buildings have since been erected more or less on the steel-frame system. At the present time four or five such buildings are being erected in London in accordance with the new Building Act, which permits thin external walls when a steel frame is used.

In Manchester a building is being erected in ten storeys, 300ft. long and 250ft. deep, containing about 6,000 tons of steel.

Steel skeleton construction requires a systematic organisation for the preparation of drawings, as well as for erection, great accuracy being necessary in order to obtain efficiency and speed.

In a building of this type the steelwork is the most important item, as upon it the safety of the structure depends, as well as the speed of erection of the building.

Concrete and steel are now being used in combination with great success, the steel being employed for pillars and girders, and the concrete for floors, foundations and retaining walls.

Concrete reinforced with steel rods forms an excellent material for floors and for fireproofing of steelwork.

A construction with hollow bricks reinforced with steel rods is sometimes used for floors.

While the American practice has been to space the floor beams about 6ft. apart, the general practice in England is to place the beams 12 to 14 feet apart for reinforced concrete floors, and 2ft. 6ins. to 3ft. apart for solid concrete floors, not reinforced.

Quick erection is the main advantage of steel construction. All drawings and details of erection are worked out complete before work starts on the site. An accurate survey of the latter is made, and the steelwork is prepared complete in the shop to fully dimensioned drawings, so that, given accurate work and careful inspection, erection is simple and precise.

The old method of three-leg gantry for Scotchman cranes is not required where a steel frame is adopted, as the steel frame forms the support for the cranes, which are raised from floor to floor as the erection proceeds.

Since the British Engineering Standards Committee drew up a specification for structural steelwork it has been usual to specify the material to pass the requirements therein contained.

It is easy to obtain good standard steel with an ultimate tensile strength of 28 to 32 tons per sq. in.

The standardisation of sections has had a very good effect on the steel market, and it is easy for the engineer to select sections.

It would probably be an improvement to add some more I-beams to the present standards, and it is hoped that the above named committee will take this into consideration.

POINTS IN CONCRETE PRACTICE.

BY THOMAS POTTER.

The use of concrete for building purposes is making steady progress. But there are still many things for which it is well adapted that have as yet received but scant attention.

The behaviour of the material is so eccentric—the result of the cement as a rule—that its proper treatment is puzzling at times. Two cases of quite an opposite character which have occurred recently are typical of this. A piece of the stone wall of a building erected about five years ago came away, and from no apparent cause. On cutting into the wall to trace the origin of the mischief it was found that it commenced at a lewis hole which was known to have been filled with neat cement and punched in. This was a clear case of expansion, and points to not punching or ramming the cement in lewis or other holes in stone. It was proved that the cement had been on the works a considerable period before use.

In another case the terrazzo paving on a concrete floor laid four years ago has suddenly developed cracks, this being attributed to the contraction of the cement in the concrete. Cases like these—more especially the latter—are difficult of explanation. One of the most serious problems architects have to deal with at the present time is dry rot, due probably to forced seasoning of the wood, which opens the pores, and the inferior quality of timber employed compared with what was formerly in common use. In a large infirmary building the architect has had to pay heavy damages for neglect in not taking sufficient precautions to prevent dry rot occurring in the floor boards, which appear to have been laid direct on the concrete, or on thin strips of wood. Dry rot was proved to have commenced with the levelling stumps used when the concrete was laid, and not subsequently withdrawn, which transmitted it to the wood floor boards. This was a hard case, for probably in nine cases out of ten it is never considered that the stumps should be withdrawn. In another instance, quite recently, in a large asylum the whole of the ground floor boards have been attacked by dry rot, the result of nailing them to wood joists or small timbers embedded in the concrete. The result was attributed to the proximity of heating pipes beneath the wood flooring. But the probability is that

dry rot would have developed apart from the contiguity of the heating pipes.

Instances of this kind emphasise the necessity for architects to see that wood is not embedded in soft concrete, unless plenty of free air and ample ventilation can be secured. Concrete brings in its train difficulties of this character which necessitate a better knowledge of the material than at present obtains. The apathy shown with regard to acquiring practical information on reinforcement and concrete generally is disheartening to those who open up means by which much information could be gained. When papers are read at the Concrete Institute the attendance is most unsatisfactory; the very men to whom this information would be of the greatest assistance—architects' assistants and pupils—being conspicuous by their absence.

Concrete blocks for walls are finding favour in some localities, but their cost depends largely upon the facilities for obtaining suitable materials on the site, or near thereto, and saving the cost of railway carriage.

For buildings for small holdings concrete should be invaluable, owing to its adaptation to so many purposes, its resistance to climatic changes, and the necessity for cheapness. County Councils and small holders' associations would do well to investigate its possibilities.

REINFORCED CONCRETE CONSTRUCTION.

It is perhaps in the nature of the case that reinforced concrete construction is represented at the Building Trades Exhibition mainly by its elements rather than by its combinations. The materials, and the means of uniting them, are there in abundance, and that is almost as far as it is possible to go. There are, however, many very interesting exhibits of the units of construction, such as reinforced floors on several systems; and these, as well as the illustrated trade pamphlets and sets of photographs showing work executed, will do much towards extending the popularity of reinforced concrete construction. There is, however, at least one example of actual practical construction, the pavilion of the Expanded Metal Company having been erected upon their system. Members of the Concrete Institute, we notice, will visit the Exhibition on May 1st, and it may be that their inspection may suggest to them the desirability, and their conference may evolve the means, of presenting the subject before the public, at future exhibitions, in a more popular form. Some striking appeal to the eye, by means of models, diagrams, and photographs, should surely be possible, and might be supplemented by a free distribution of a summarised account of the system—or, better still, by the publication of a booklet for which a small price would be charged; the public setting a higher value on what they pay for than on what they get gratis.

For there is still much educational work to be done—among architects and builders as well as among the general public. An important step in this direction was

the foundation of the Concrete Institute, which, by its investigations, discussions, and publications, is doing much to dissipate the early prejudices, misunderstandings, and misgivings to which every important innovation very naturally gives rise, and the recent institution of classes in the subject at the L.C.C. Brixton School of Building is not without its significance. The most potent factor, however, in the popularisation of the system is unquestionably its adoption by Government architects for the construction of important buildings such, for instance, as the General Post Office in Newgate Street. For once in a way, it was fortunate that Government was above the by-laws; and the success of such official adventures in reinforced concrete construction has not only stamped the method with authoritative sanction, and thus inspired confidence in it, but has probably had an important bearing on the reform of the by-laws by which it was so long hindered from making headway in this country; and the L.C.C. General Powers Act of 1909, by which some of the more absurdly harassing restrictions were removed, had also, doubtless, its moral as well as its physical effect.

Very impressive, too, are the many notable semi-public buildings—bridges, docks, piers, baths, theatres, banks, insurance premises, huge commercial emporiums, churches, institutions, like the imposing Wesleyan Hall at Westminster—which, wholly or in part constructed on the new method, bear widespread and commanding testimony to its immense range of adaptability.

This Journal early discerned the potentialities of reinforced concrete, and, from the outset, has taken the candid and faithful course of advising architects and builders not to pretend to ignore the method, but to obtain the mastery of it; for it seems to be a true view that while at first it is likely to be largely left in the hands of engineers and specialists, it must ultimately become a commonplace of the general practitioner, and that

therefore the sooner he qualifies for the work, the less occasion will he find for unavailing regret. That is the common sense view of the position.

SANITARY ENGINEERING.

The good Dresdeners, in urging us, the other day, to take part in their forthcoming hygienic exhibition, paid us no mere idle compliment in saying that we ought certainly to be represented, because of our pre-eminence as pioneers in hygiene and sanitation. One consequence of our reputation is that the British sanitary engineer is usually a much-travelled man. His services are sought the wide world over. Another is that many foreigners visit the Building Trades Exhibition with the express object of seeing with their own eyes the latest developments of a science that is peculiarly our own. Yet it is not so very long since we had but little more reason than our Continental neighbours to boast of our achievements in sanitation. The days of filth and squalor, of brick drain and unflushed and untrapped closet, are as recent as the still-remembered lives of Chadwick, Simon, Playfair, Richardson—ardent preachers of the gospel of public health, whose words have hardly yet ceased to ring in our ears. Nor have we forgotten the names of Dr. Neil Arnott, Dr. Kay, and Dr. Southwood Smith, who were almost at the beginning of the reform when, in 1838, in consequence of a virulent outbreak of disease in the East End of London, they were called upon to form the first Sanitary Commission.

Since then, we have never wanted for ardent disciples of those fervent apostles of cleanliness and public health, but it was not until the sixties that London designed the main drainage system which has made it the healthiest city in the world, and not until 1901 that the new outfall sewers at Barking were constructed, while those at Crossness were still later, and the Council's most recent

scheme dates only from 1899, and will not be completed until next year. The Council now maintains about 330 miles of main sewers, which drain an area of 140 square miles, with a population of about five and a half millions; the amount of sewage treated at the outfall works daily being nearly 250 million gallons.

The reward of all this labour and expense has been an extraordinary and progressive diminution in the death-rate, until it has now become lower than that of any other capital in Europe. In this magnificent result, pure and abundant water supply has no doubt played an important part; but, after all, this is only one of the many resources which the hygienist, the sanitary engineer, and the much-maligned practical plumber have turned to excellent account.

But, in spite of the enlightened theorist, the inventive and resourceful engineer, and the skilful workman upon whose technical education so much attention has been lavished, much remains to be done. Frequent outbreaks of zymotic disease in country districts reveal sanitary conditions that are almost incredibly primitive, not to say barbarous, and probably some years must yet elapse before we shall be able to say that Britain is completely sanitary and salubrious from end to end; and, in particular, the last word has not been said with regard either to sewage-disposal with all its bacteriological marvels, or with regard to efficient ventilation, of which the incidence is so local and casual as to baffle the confident application of general principles.

With regard to house-drainage, however, it would almost seem that something like finality has been reached. So many and so ingenious are the inventions for rendering the house sweet and wholesome, that it would require an exceedingly sanguine temperament to anticipate any very startling revelations at the Building Trades Exhibition; the most that can be reasonably looked for being refinements upon known devices. We may confidently expect to see improved patterns, more artistic ware, more luxurious fittings, more rapid flushing, with a nearer approach to noiselessness, more economical contrivances for hospitals and institutions, and, in particular, a heightening in every way of the already sybaritic luxuries of the bath. But then, perfection, like pleasure, ever recedes as we pursue it, and it may be that the exhibition accelerates the pace.

CONTRACTORS' PLANT AND MACHINERY.

BY A. G. WHITE.

The twentieth century marks approximately the beginning of an era of steel-frame and reinforced concrete construction in this country, from which should evolve new methods of building. Professor Pite, addressing the Institute of Builders on the teaching of building construction with architecture, remarked "that the architecture of Ancient Greece was exceedingly simple in construction; so far as can be known the practice of its builders going little or no further than that of the lintel or column; but upon that principle, so subtle and refined was their sense of beauty, that they built up the whole of the architecture we know as the classic of the three great orders."

The new construction, itself a revival of the column and lintel, and possessing advantages of economy, may well become



OPENING CEREMONY.

the basis of a new style. And as the methods of construction influence the style, so do the builder's plant and machinery. The new Opera House and the Kodak Building in Kingsway illustrate this. In the former, apparently of the usual stone and brick construction, the familiar large power driven derrick cranes are in use; while in the latter, a steel-frame building, nothing larger than hand cranes are being used by the engineers, crab-winchies sufficing for raising the stone facings and a narrow hoist for the rest; the floors are put in before the walls, and a simple centering serves the successive similar floors; the casing walls involve no lifting and placing of heavy weights. In the Opera House, however, the walls are thick: heavy masonry has to be fixed, many bricks lifted, as well as girders of heavy sections. The great cranes are therefore necessary for the rapid construction of this type of building, but not for the other. Although the present rapid development of steel-frame and reinforced concrete construction involves the solving of new problems daily, there is so far less novelty in erection methods than might be expected. But, doubtless, many minds are working on these problems, and improved methods will result.

Perhaps the most promising field for experiment is that opened up by Mr. Gilbreth, an American expert in rapid building, by his study of the movements required in shovelling and bricklaying by means of action photographs, whereby improvements in method of handling, form of trowel, and design of scaffolding were effected which, it is claimed, doubled the output of his men.

This line of research might be applied to all handicrafts with valuable results, especially for the teaching of them. Indeed, much is to be learned from systematising America. As Mr. Moritz Kahn observed in a suggestive paper before the Institute of Builders last year, "The unit costs of American constructions are generally lower than unit costs here, notwithstanding the higher rate of wages paid and the greater cost of materials in America. It may be granted that buildings here, in many instances, are of a more substantial character, but the difference in cost is not so much due to that consideration as to the saving of waste labour and materials by superior organisation."

Mr. Kahn then lucidly explained the various equipment for reinforced concrete construction used in America and showed the systematic way in which cement mixing, centering, scaffolding, handling materials, keeping track of progress, and the staff are organised in American building concerns.

Steel-frame building may influence clients, and architects too. Mr. S. Bylander has shown that although great savings in cost, speed of erection, and space provided are possible, to secure them the planning and designing and methods of execution must be systematically carried out. "It is," he says, "a very serious proposition to make alterations to the steel design during progress of manufacture, and still more during erection."

To realise the advantages of the system, therefore, architects and clients will have to decide in advance, and then refrain from changes during construction.

The specialisation of erection devices has begun. Already portable scaffolding or steel-frame buildings and adjustable centering for reinforced concrete floors have been patented. The latest novelty is the application of the oxy-acetylene

flame to the cutting of steelwork, an American invention; the average cutting speed is reported to be one 24-in. by ½-in. plate in one minute. The flame is slender and the fittings are light and convenient.

PAINTING & DECORATION.

BY ARTHUR SEYMOUR JENNINGS.

It would be interesting to learn the opinion of architects and art lovers generally as to the progress made in mural decoration during the last twenty-five years. Doubtless many would contend that instead of an advancement there has been a very great retrogression, and that the disappearance of hand-painted work and the popularity of machine-made decorative materials has given a death-blow to real decorative art from which it will never recover.

Those, however, who consider the matter without prejudice will probably agree with the writer that, leaving out of consideration high-class hand-painted work—which after all was only within the reach of the rich—there has been a marked improvement in domestic decorative art when considered from the point of view of the general public. In a limited space it is only possible to deal with a few phases of the subject, and, by way of example, one may consider the case of a London house of medium size, one, for instance, which would let for £50 to £60 a year. Such a house 25 years ago would probably be grained throughout, excepting perhaps the smaller bedrooms, which would be painted "stone" colour—that most insipid, vague and unsatisfactory of all tints. The dining-room walls would probably be painted green and the drawing-room papered with a pattern in which twisted and folded blue ribbons and impossible roses formed the chief part. The kitchen and offices were almost invariably very dark, and often almost inaccessible, although a consideration of this part of the subject does not belong to the present purpose.

To-day we have at no increase of cost white or tinted enamel woodwork which looks well, harmonizes with nearly every wall decoration, and, when properly done, lasts so long that it is without doubt the cheapest paint known. For our walls, instead of sprawling meaningless ornaments crowded on a wall-paper, we have soft flat effects produced by washable distempers or water paints, or the plain papers with corresponding pattern friezes which give a satisfactory background to pictures and furniture, and yet the colouring of the frieze yields a decorative effect. Above all, we have as a product of the last four or five years a large series of wall-papers which are specially designed to do away with the chief objection from an artistic point of view, which has been urged against the use of that material, namely, in being produced by machinery it necessarily has a machine-like appearance, and when stuck upon a wall obviously has no pretensions to being designed for the space it occupies. The new departure referred to is in the production of "Crown" friezes which form part of the wall pattern below, and, more important still, of the many "adaptable" friezes so designed that the principal ornament may be centred or distributed on the length of the wall according to its size, the intervening spaces being extended or contracted as circumstances may require. In addition, the system of panelling in wall-paper has now received a decided "fillip." There is nothing new, of course, in panelling

in wall-paper, but the new patterns provide many very narrow stripes or spotted or diaper designs which are eminently well fitted for use in the centre of panels, and these, together with bright narrow borders—the pattern of which permits of mitreing at the corners without mutilation of the patterns—give excellent results at a minimum outlay.

Decorative art then for the general public cannot be said to be in an unsatisfactory condition, and although there has been a very distinct revival of some of the Early Victorian patterns, consisting largely of the ribbons and roses already referred to, these patterns are by far the least objectionable of those in vogue at the period mentioned, and being mostly on white or cream grounds and bright and cheerful in appearance, they will doubtless for a year or two retain their popularity.

In paint and painters' work generally, the average man might suppose that but little progress has been made, yet, as a matter of fact, the contrary is true. Space will only permit of the mention of a few of the improvements which have been effected during the last decade. The most important is the growing demand for non-poisonous paints or pigments other than white lead. Architects, engineers, and house-painters generally have for so many years regarded white lead, linseed oil, and turpentine as being the beginning and the end of all that is required in painting, that it has taken some time for them to properly appreciate other materials. Yet the poisonous qualities of white lead have been demonstrated by the operations of the Workmen's Compensation Act, which schedules lead poisoning as "an accident," while the tendency of white lead to change in the presence of sulphur compounds which are found in the air of all large cities, has caused attention to be given to other white pigments, such as zinc oxide, lithopone, sulphate of lead, etc. But the most distinct advance in this direction has been the knowledge obtained by an elaborate series of tests conducted by various American scientific associations, which has proved beyond a doubt that a combination of pigments yield a paint of a maximum durability. Then the long continued high price of linseed oil and American turpentine has caused the manufacturers to investigate the possibilities in other directions, and although it cannot be said that a great deal of progress has yet been made, as far as linseed oil is concerned, yet various other vegetable oils, such as Soya bean oil, Chinese wood oil, poppy oil, etc., are rapidly coming to the front. In turpentine, however, the success has been more marked, as it can be well understood when it is remembered that turpentine acts in a paint only as a temporary thinner, and that all, or very nearly all, of it evaporates as the paint dries. White spirit, a special petroleum product, which for our present purpose may be likened to petrol, is now used largely among painters, and, except for very special work, is just as good as American turpentine, and much cheaper. Petroleum as a painter's material is regarded with abhorrence by reason of the fact that ordinary paraffin oil will not dry, but the lighter petroleum oils, say, for instance, benzene, evaporate very quickly—in fact, this is a disadvantage, particularly in flatted work. The white spirits referred to, however, are so produced as to evaporate at a moderate speed, yet to leave no residue whatever.

There are other improvements which might be noted, such, for instance, as the

beautiful reds now used almost exclusively in place of vermilion. These reds until about four or five years ago possessed the disadvantage of bleeding or penetrating a paint which might be placed over them; but that defect has now been entirely overcome, and there is no difficulty in getting non-bleeding bright reds which are even more permanent than vermilion, while costing less than half.

Aluminium paint is another speciality which is now very largely used, possessing the advantage of being handsome in appearance and very durable in use, particularly when applied to ironwork, such as entrance gates, palings, etc., or even for ordinary ironwork. The Great Central Station, Marylebone, is now being painted with this material.

RECENT PROGRESS IN HEATING BUILDINGS.

BY A. H. BARKER, B.Sc., etc.

In heating and ventilation the chief progress that has been made during the past five years consists not so much in any radical alteration in the means adopted as in steady development of the application of well-known methods.

The heating of a building consists essentially in employing energy in the form of (1) fuel; (2) some heated medium, such as water, steam, air; or (3) electricity.

Of these, the first and simplest method, the open fire, has obtained a firm hold in this country, and will probably maintain it in spite of the strenuous efforts of the heating trade to displace it by some method more economical in fuel consumption—such as heating by hot water or steam.

There have been notable improvements within recent years in the efficiency of the fire-grate, that is to say, as regards the amount of heat obtainable from a given consumption of coal, but the amount of exact information available on this point is limited, owing to the great difficulty of making precise tests.

The improvements consist largely in methods of arranging the bounding surfaces of the fire, so as to deflect a larger proportion of the total heat generated, and also in placing the fire at so low a level that more heat is taken from it, and so that the combustion can be regulated.

Valuable combinations of the methods of heating by open fire and by hot water circulation have also been recently introduced. The method consists in attaching a boiler to an existing fire-grate, or in providing a separate boiler which can also be used as an open fire, the circulation being effected in the ordinary way by pipes leading from this boiler to radiators conveniently placed. By this means much of the waste heat which is commonly thrown up the chimney can be trapped before it gets into the chimney, and then transferred to other parts of the building.

The method of heating by radiators has advanced in improved designs of radiators and boilers, and in the generally improved knowledge of how pipes are best arranged in order to secure a uniform result at the radiators. This method has received a somewhat striking development in the patented process whereby the heat is applied direct to the walls of a room by means of a surface pad or panel of heated composition. This method has been carried out in several large buildings in London and elsewhere with very satisfactory results. The method employed consists in circulating water at a high temperature through pipes embedded in the hot panel,

whereby the surface of the wall becomes heated without at the same time heating the air. The ordinary method of heating walls consists in first heating the air by a radiator, stove, or other appliance. The circulation of the air conveys the heat to the walls, by which process the air must always be at a higher temperature than the walls. Where the walls are heated direct, the reverse is the case, and the occupant of the room experiences a feeling of warmth without the sensation of devitalisation of the air of which complaints are commonly heard.

Heating by steam has made certain advances in that more control has been obtained over the temperature of the radiators. Steam as circulated from a boiler has necessarily the temperature due to its pressure, and this cannot be reduced otherwise than by reducing the pressure of the steam or vapour. The methods by which this can be done consist (1) in forming all the steam pipes, boiler and radiators, as an air-tight space or chamber, into which air cannot pass. The steam then being raised in the boiler can be used to drive out the air in the pipes and radiators, through non-return outlets. After all air has been displaced the outlets are closed, automatically or otherwise, and the pressure in the boiler is allowed to drop. This produces a partial vacuum in the entire space and the circulation of steam proceeds at a low pressure, and consequently at a relatively low temperature, on exactly the same principle as under atmospheric pressure.

The difficulty of carrying out this system is that of keeping the pipes so air-tight that no air can get into them. Air will find its way in at every microscopic port throughout the pipes or radiators, and it is therefore difficult to maintain the vacuum for a considerable time.

Another method recently developed of reducing the pressure of the steam consists in mixing it with air. In this mixture the air and the steam each exerts its own pressure, so that the mixture can exist at the pressure of the atmosphere, although the steam is at a considerably lower pressure and temperature than steam at atmospheric pressure. The remainder of the total pressure is made up with the air entrained with the steam.

Various systems are in existence whereby this result can be effected in a more or less satisfactory manner, but all steam systems suffer from the disability that they are not under such good control as are water systems. The temperature is more likely to vary, and it is more difficult to obtain constancy and uniformity of operation. No wholly satisfactory system has yet been devised whereby steam at varying temperatures and pressures can be certainly circulated uniformly throughout a large system of pipes with the same accuracy as hot water.

The method of heating by electrical energy which is converted into heat by passing through a resistance in the apartment to be heated is perhaps at once the best and by far the most expensive method of heating a building. Before this method can come into general use—and it seems probable that it will ultimately displace all other systems of heating—it is necessary that the cost of production of electrical energy shall be very greatly reduced.

At the present time electrical energy cannot be produced otherwise than by converting the energy of the fuel (from which most forms of energy are derived) into the energy of motion or mechanical energy. It is then converted into electrical energy, and that energy is again converted into heat into the apartment to be heated. This roundabout process involves an enormous

loss of energy. A discovery whereby the direct transformation can be effected may of course be made at any moment, but until it is made the use of electrical currents for heating purposes cannot be expected to advance at a very rapid rate, for it can only be employed where the cost is of little moment, or where an electrical current can be obtained for practically nothing.

At the present low day-rate of 1d. per unit, the cost of heat from electrical sources is at least 20 times that of heating by hot water, and in the nature of things cannot be made cheaper. Ultimately, when coal supplies are being exhausted, and fuel is consequently very much dearer than at present, it is probable that all the heat for heating buildings will be obtained by a thermo-dynamic method, whereby the quantity of heat taken from the outer air can be raised in temperature by the application of power, and delivered into a building.

The cost of the plant and the power for carrying out this method is now so high that it cannot at present be described as within the range of practical politics, but there appears no doubt that this method of heating will ultimately develop, though probably not for many generations to come.

BRICKS, TILES, AND TERRAZZO. COTTA.

[BY ALFRED B. SEARLE.]

Although bricks have been used as an important building material since the earliest days of civilisation, they still retain their popularity, for a variety of reasons, quite apart from their cheapness, convenience, and durability. Yet the modern brick is a very different material from that made in former days, and is more accurate in form, more adapted to the needs of modern architects, and is capable of being produced in vastly larger quantities. Nevertheless, the time-honoured hand-made brick retains its place in London and the south of England generally, though in the Midlands and Northern counties the machine-made brick is almost exclusively used.

For the past few years there has been an increasing demand for bricks with an ancient appearance, a somewhat rough and irregularly coloured face, and a soft warm tint, with some purple tones amongst the more generally red ones. Several firms of brickmakers have succeeded admirably in producing these desired effects in a variety of ways. The makers of hand-made bricks do so by reverting to old methods of manufacture and to special care in the firing of the kilns, these latter being usually much more perfect and capable of much greater accuracy in heating than were the small single kilns used by our forefathers. The producers of machine-made bricks have adopted mechanical methods of securing a surface of roughened appearance, one firm being particularly successful in the use of a vibrating wire for cutting the clay column as it passes out of the brick machine, whilst others have adopted specially engraved moulds for the same purpose, the roughening being produced during the final pressing.

Whilst the mechanically produced appearance may serve a very useful purpose in districts where the hand-made bricks are not procurable, it must be admitted that the latter are aesthetically the more valuable.

It is always difficult to compare accurately the popularity of any given type

of brick, for different localities are so largely bound by the limitations of the clays found in them, that what may be exceedingly popular in one district may never be seen in another. Thus, leaving the area around London out of consideration, it appears probable that the stiff-plastic brick is gaining in popularity as compared with those made by the semi-dry process, and during the last few years a considerable number of works have changed from the latter to the former method of manufacture. Without entering into the relative values of the two processes, it is sufficient to say that at present the fashion is distinctly in favour of bricks made from a plastic paste rather than from a slightly dampened powder.

The rapidly extending use of reinforcement has necessitated the introduction of hollow blocks closed on all sides, so as to overcome the objectionable cutting necessary when ordinary hollow blocks are employed. The use of these entirely closed blocks is not as yet sufficiently extended to warrant any definite expression of opinion as to their value, but there appears to be little doubt that their use will extend rapidly as soon as their advantages become more widely known.

The use of glazed blocks with an appearance considered to bear some resemblance to white marble is also extending, particularly in the case of public and semi-public buildings in large towns. The ease with which they can be kept clean is greatly in their favour, and it appears probable that this glazed terra-cotta will constitute an important building material in the future, as already the number of buildings in which it is used is very considerable.

Roofing tiles, like bricks, appear to be reverting to the old types of the Middle Ages, or to modern adaptations of those types. Contrary to expectation, the shapes of tiles do not materially alter, the number of successful patterns being distinctly limited, in spite of the many ingenious arrangements for interlocking the tiles and so avoiding the risks of those attached by nails or nibs alone. Remembering that tastes differ greatly in different localities and that no general statement can be true of all districts, it will be found that small plain tiles are the most popular just now and appear likely to be so for some time to come, though the large Roman tiles and allied patterns are being used in large quantities. Glazed tiles, such as are used in Spain and elsewhere, have not yet attained much popularity here, though their use is very slowly increasing; the use of a "dipped" tile is, however, very popular, as this enables a newly erected building to possess some of the appearance of one that has been erected some years, and of which the roof has become partially covered with vegetable growth. A different, though equally effective, appearance is obtained by burning the tiles somewhat irregularly, so as to obtain a play of colours not unlike that produced in the manufacture of "old style" bricks.

Whilst for factories and engineering work the requirements of the architect or designer are based chiefly on strength, impermeability and other structural characteristics, and not on the appearance of the articles, the most progressive architects engaged in designing residences appear to be devoting themselves more and more to the question of external appearance. For this reason they are demanding bricks of unusual sizes, of irregular colour, and of a rough instead of a smooth self-cleaning surface. Tiles are similarly characterised the great aim of

the architect being to obtain a mellowed and "old" appearance in place of the "raw red" of new buildings. Near the larger manufacturing centres the presence of smoke necessitates some modification of these views, and, for the larger buildings at any rate, the use of glazed blocks is considered to be the best practice.

The competition of concrete, at one time so dreaded by brickmakers, is becoming better recognised as legitimately fulfilling certain functions, and is regarded as an ally rather than as an enemy by an increasing number of brick manufacturers. Simultaneously, the use of reinforced brickwork is growing, and is proving a formidable competitor to concrete in several directions.

The fireclay trade has taken a new lease of life in several quarters, owing to the increasingly strict specifications now demanded in some quarters—a change which is proving beneficial to the larger makers of refractory goods.

Sand-lime bricks continue to hold their own in districts where clay suitable for brickmaking is scarce and sand is plentiful, though many makers have met with serious disappointments in manufacture.

Probably the most important direction in which progress will occur in the future will be in the insistence of a minimum crushing strength clause in all specifications of bricks for important structures.

THE PROGRESS OF SCAFFOLDING.

BY A. G. H. THATCHER.

Scaffolding to the non-expert appears to have shown no development for some years. The expert will have noticed, however, that although the general methods remain the same, some change is taking place in the details. But the alteration is not rapid. The conservatism of the builder is against it. Ordinary building construction may and does alter; in this case the builder is in the hands of the architect and engineer, and their requirements force those actually constructing to be sufficiently abreast of the times. The means of construction is a side issue with which no one except the builder is particularly concerned. There being no necessity, inventions or adaptations are not common. Alterations in detail secure consideration and use when a definite result can be shown, this usually being a saving of expense. This may accrue by allowing an increase of speed in erecting scaffolding and also in creating an element of safety which, in view of liabilities under the Compensation and other Acts, may be considered wise. Many of the inventions and adaptations for improvement are the work of mechanics engaged in the trade. Their patents are regularly protected and advertised, and with almost equal regularity disappear from the market. Those remaining meet with some share of success, but even the better known are far from being in general use. The time-honoured rope connection is a case in point. Fibre ropes have many defects. Their reliability is not too great; the tension on the poles connected varies with the weather, constant attention is needed, and the connection is slow to make; nevertheless the rope still holds the field in spite of wire, steel brackets, and other means of securing a fastening.

The principal material for scaffolding—timber—has been in use for hundreds of years, and is probably the best, though not for all purposes. The erection of the Scotch derrick, with three timber legs and

platform, is slow and cumbersome, and there is a slight tendency at the present time to erect these or similar appliances of steel, a line of development which seems worthy of pursuit. A steel travelling crane has been in use at the British Museum extension, and it is difficult to imagine that a timber erection could have served so usefully.

The great advantage of the "Scotchman" is that in many instances the power served by it can be used practically all over the building. The limitation is created by the ultimate length of jib and the impossibility of this being used in a complete circle. In the German system of construction it has been found useful to have a number of light cranes placed at regular intervals round the outside scaffolding. The advantages of the system are considerable, the chief being perhaps that the number of the cranes allows of a more speedy manipulation of material. The disadvantages are the comparative shortness of jib and insufficiency of strength to carry heavy material. An effort is to be made shortly to put these cranes upon the English market, and they will probably meet with some measure of success. The same may be said of some recent innovations to replace the spruce poles in ordinary scaffolding. Poles are clumsy, liable to early decay, require special storage when out of use, and in the best brands are not cheap. Nevertheless there is an element of solidity about a pole scaffolding when properly built which suggests strength and safety. It undoubtedly affords a much larger factor of safety than would be given to any system worked out by formulæ. The strength given may be determined by rule-of-thumb or it may be the result of experience only, yet the fact remains that an excessive strength is given and the workmen know and trust to it. These points are well emphasised by a comparison between English and Italian scaffolding. In Italy poles are generally used, often of such a light description as to be almost weird in their constructive arrangement, but apparently they are sufficiently strong for their purpose.

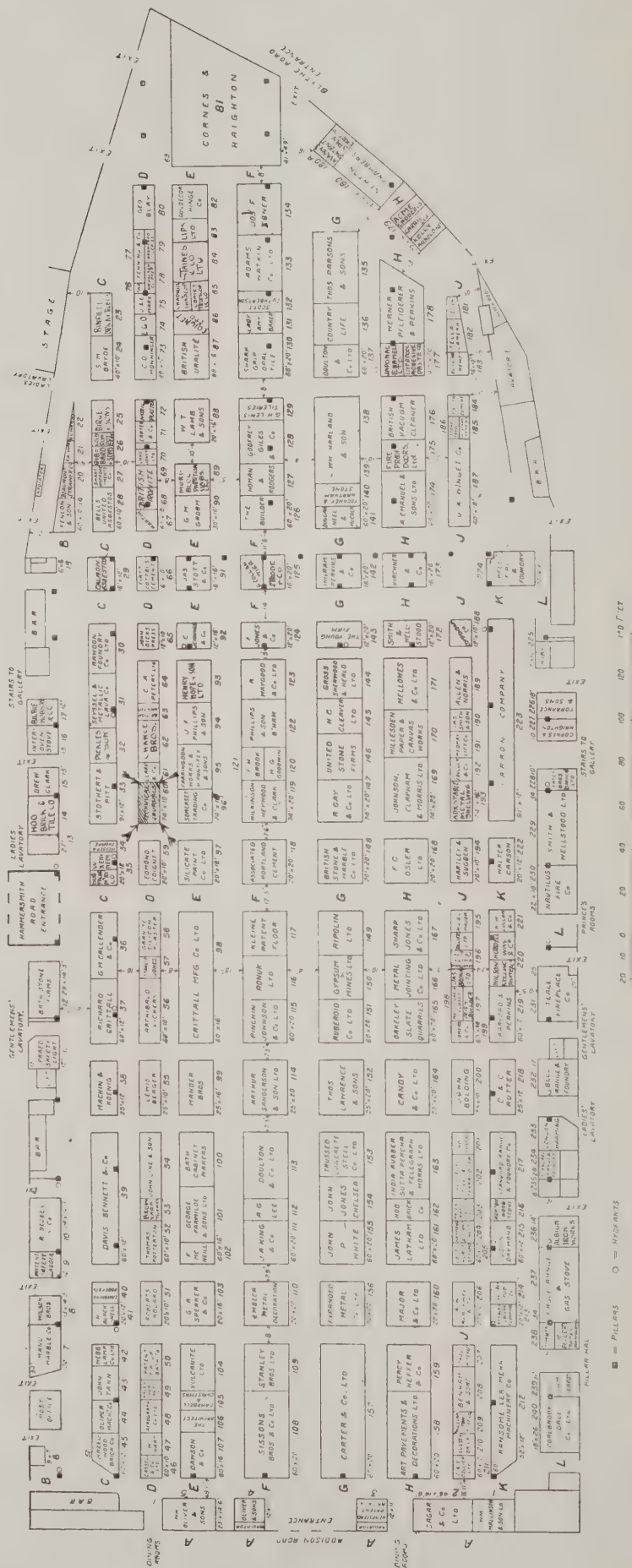
A lighter type of scaffolding was put upon the English market a few years ago which was very useful for repairing purposes. It was built up on ladders having parallel sides. The French builders made a very general use of it, but no such erection has been noticed in this country for some time. The boat or cradle seems to meet our views in this respect, although in many cases the element of danger is present to a great degree.

Amongst minor details of plant which have been improved during recent years may be mentioned the cripple. A triangulated arrangement of boards hung to ladder rungs by iron hooks was at one time considered sufficient, but recent appliances of this nature are now fitted with sides, guard rails, etc.

Many improvements in adjustable ladders are now being made, but the ordinary ladder remains as heretofore, despite the fact that it is still impossible to renew a defective rung without taking the whole ladder apart. There is surely room here for improvement. Rungs will decay and wear irregularly, and it should be an ordinary labourer's job with a hammer to renew any such, without recourse to the ladder makers or the carpenter's shop.

More scientific methods of scaffolding will probably coincide with the greater spread of technical education. Unscientific methods are a source of irritation to the man who knows, and this will prompt a closer attention to developments of the future.

BUILDING TRADES EXHIBITION OLYMPIA



LIST OF TRADE NAMES.

The following list of Trade Names will be found useful by visitors to the Exhibition, as well as by others who are frequently at a loss to locate some speciality of which they know the Trade Name but lack further information.

There is, of course, no reason for including names that form part of the title of the vendors, and consequently only such have been inserted as in themselves afford no clear clue.

- Adamantine Clinkers, etc.—Towers' Adamantine Clinker, Fire, and Roofing Tile Co., 199, J.
Aero Window Sash Adjuster.—Smart Improvement Co., 27, C.
Anchor Reliance Safes, etc., John Tann, 107, E.
Anchor Wall Ties.—W. T. Nicholson and Clipper Co., Ltd., 78, D.
Aquatte Manhole Bottom.—Sharp, Jones and Co., 167, H.
Armadek Flooring.—Art Pavements and Decorations, Ltd., 158, H.
Arteratt Stains.—Lewis Berger and Sons, Ltd., 55, D.
Barker's Heating System.—J. F. Phillips and Son, 94, E.
Breala Asphalte.—La Brea Asphalte Co., Ltd., 27a, B.
Brice's Brick-moulding Machine.—Hoo Brick Co., Ltd., 14, B.
Burkone Fire.—Standard Range and Foundry Co., Ltd., 234, L.
Bush Fire.—Nautilus Fire Co., 230, L.
Cable System of Heating.—J. F. Phillips and Son, 94, E.
Callendrite Sheeting.—George M. Callender and Co., Ltd., 36, C.
Carbolineum Wood Preservative.—C. A. Peters, Ltd., 64, D.
Carbotron Portable Stove.—C. A. Peters, Ltd., 64, D.
Catena Drawing Table.—B. J. Hall and Co., Ltd., 16, B.
Cebino Distemper.—C. H. Musselwhite and Son, 181a, J.
Ceramic Marble and Ceramiston.—Carter and Co., Ltd., 157, G.
Ceresit Waterproofing Material.—British Ceresit Waterproofing Co., Ltd., Bay 23, gallery.
Cliftonite Paving.—A. C. W. Hobman and Co., 11, B, gallery.
Combopoard.—H. G. Goodwin and Son, 120, F.
" " Machin and Koenig, 38, C.
Congo Roofing.—Bristowe and Co., Ltd., Bay 12.
Coverine Undercoating.—Walter Carson and Sons, 222, K.
Cowdray Bath.—John Bolding and Sons, Ltd., 200, J.
Cromoleth Plaster.—Granite Silicon Plaster Co., Ltd., 58, D.
Devon Fires.—Candy and Co., Ltd., 164, H.
Deydo Distempers.—Pinchin, Johnson and Co., Ltd., 115, F.
Diamond Ladders.—Drew, Clark and Co., 15, B.
Drawwell Grate.—Albion Iron Co. (London), Ltd., 236, L.
Duresco Water Paint.—Silicate Paint Co., 97, E.
Duroolithic Composition.—Fenning and Co., Ltd., 77, D.
Ebnerite Flooring Composition.—Jos F. Ebner, 134, F.
Eclipse Glazing.—Mellowes and Co., Ltd., 171, H.
Enamelac Japan.—Lewis Berger and Sons, Ltd., 55, D.
Endelline Enamel.—Thos. Parsons and Sons, 135, G.
Esse Anthracite Stoves.—Smith and Wellstood, Ltd., 172, H.
Eternit Roofing, etc.—G. R. Speaker and Co., 103, E.
Eureka Traps and Valves.—John Jones (Chelsea), Ltd., 154, G.
Eureka Sash Balance.—Allen and Norris, 189, J.
Falconite Enamel.—Wilkinson, Heywood and Clark, Ltd., 119, F.
Fenestra Casements, etc.—Crittall Mfg. Co., Ltd., 98, E.
Ferret Lockfast Joint.—Cakebread, Robey and Co., 40, C.
Ferro-Glas Construction.—J. A. King and Co., 111, F.
Fhuate.—Bath Stone Firms, Ltd., 12, B.
Ferromac Road-binder.—Roadite, Ltd., 14a, B, gallery.
Fiddian Sewage Sprinklers.—Birch, Killon, and Co., 43, B, gallery.
Filocol Distemper.—Gelatinous White Co., Ltd., 196, J.
Florite Opal Tiling.—F. H. Brook, 121, F.
Galvo Filter, Tap, Fire-extinguisher, etc.—Webb Lamp Co., Ltd., 42, C.
Gamble's Patent Sash-frame.—Bramble Joinery Co., 20a, B.
Genasco Asphalt.—Robert W. Blackwell and Co., Ltd., 206, J.
Hall's Distemper.—Sissons Bros. and Co., Ltd., 108, F.
H. B. Reinforcement.—Rd. Johnson, Clapham and Morris, Ltd., 169, H.
Hella Light.—Webb Lamp Co., Ltd., 42, C.
Hercules Partitions, etc.—Fredk. Jones and Co., 124, F.
Holcrete Block and Pipe Machines.—John Pickles and Son, 32, C.
Hy-rib Reinforcement.—Trussed Concrete Steel Co., Ltd., 153, G.
Impenetrable Paints, etc.—R. Gay and Co., Ltd., 147, G.
Japolite Japan White.—Walter Carson and Sons, 222, K.
Kahn Trussed Bars.—Trussed Concrete Steel Co., Ltd., 153, G.
Kiessling's Woodworking Machinery.—R. Becker and Co., 10, B.
Kruse's Cradle.—Stephens and Carter, Bay 3, gallery.
"Kulte" Cork.—Hobdell, Way and Co., Ltd., 220a, K.
Kulm Hollow Bricks.—Horace W. Cullum and Co., 221, K.
La Belle Enamels.—Walter Carson and Sons, 222, K.
Lacrite Enamel.—Thos. Parsons and Sons, 135, G.
Lakumen Bitumen Sheeting.—F. McNeill and Co., Ltd., 103, F.
Leddore Dampcourse.—George M. Callender and Co., Ltd., 36, C.
Lithomac Asphalte Paving.—Limmer Asphalte Paving Co., Ltd., Bay 16, gallery.
Mack Fireproofing.—J. A. King and Co., 111, F.
Marmette Tiles, etc.—Art Pavements and Decorations, Ltd., 158, H.
MAXimum Glass.—Chance Brothers and Co., Ltd., 62, D.
Medmenham Tiles.—Art Pavements and Decorations, Ltd., 158, H.
Metacon Metal Shelving, etc.—Adjustable Shelving and Metal Construction Co., Ltd., 193, J.
Metaxin Wall Decoration.—S. M. Bryde and Co., Ltd., 24, C.
Minerva Paints.—Pinchin, Johnson and Co., Ltd., 115, F.
Mosaic Paints.—Thos. Parsons and Sons, 135, G.
Muraline Washable Water Paint.—Walter Carson and Sons, 222, K.
Muranda Water Paint.—Solita Cement Waterproofing Co., 184, J.
Onako.—Thos. Parsons and Sons, 135, G.
Overine Enamel.—S. M. Bryde and Co., Ltd., 24, C.
P. and B. Papers and Paints.—Ruberoid Co., Ltd., 151, G.
Panel Heating System.—Richard Crittall and Co., 37, C.
Paragon Blockmaking Machine.—F. Johnson and Co. (Hull), Ltd., 235, L.
Pearloid Pendant.—F. and C. Osler, Ltd., 168, H.
Permalithic Flooring.—George M. Callender and Co., Ltd., 36, C.
Pneumonic Cistern.—Mellowes and Co., Ltd., 171, H.
Poilite Asbestos Tiles, etc.—Bell's United Asbestos Co., Ltd., 28, C.
Premier Wood-working Machine.—J. Sagar and Co., Ltd., 2, A.
Prismolith Paints.—Wilkinson, Heywood and Clark, Ltd., 119, F.
Racphas Stone Slating.—Roberts, Adlard and Co., 51, D.
Rex Mortising Machines.—Wilson Brothers., 8 B.
Rexilite Sheeting.—Vulcanite, Ltd., 104, E.
Ridgely Wallpaper Trimmer.—John Line and Sons, Ltd., 54, D.
Roadoleum Road Dressing.—Anglo-American Oil Co., Ltd., Bay 9, gallery.
Rubbered Flooring.—Charles L. Cuthbe and Co., 14, B.
Rystolite Enamel.—Gross, Sherwood and Heald, Ltd., 114, G.
Salubra Enamel.—Godfrey Giles and Co., 127, F.
Savo-Spaco Baths.—Patent Tip-up Bath Co., 50, D.
Scaffex Scaffold Ties.—Patent Rapid Scaffold Tie Co., Ltd., 203, J.
Seminocotic.—Bromyard Tileries, Ltd., 53, D.
Solignum Wood Preservative.—Major and Co., Ltd., 160, H.
Silvertown Patent Mosaic.—Indiarubber, Gutta Percha, and Telegraph Works, Ltd., 163, H.
Silveroid Paint.—Pinchin Johnson and Co., Ltd., 115, F.
Smith Mixer.—Stothert and Pitt, Ltd., 33, C.
Snowite Enamels.—Wm. Harland and Son, 138-9, G.
Southwater Bricks.—Sussex Brick and Estates Co., Ltd., 210, J.
Stamfordstone Tiles, etc.—Williamson, Cliff, Ltd., 209, J.
Steonite Decorations.—Emdeca Metal Decoration Co., Ltd., 119, F.
Stocal Tiling.—F. H. Brook, 121, F.
Stonament Facing.—Ivoril Plaster Co., 72, D.
Stoprot Wood Preservative.—Economic Fencing Co., Ltd., 258, B.
Uralite.—British Uralite Co. (1908), Ltd., 87, E.
Tavria Bituminous Cement.—Bristowe and Co., Ltd., Bay 12.
Tegoline Enamels.—R. Gay and Co., Ltd., 147, G.
Tegon Tiles.—W. T. Lamb and Sons, 88, E.
Tekko Wall-covering.—Godfrey Giles and Co., 127, F.
Thrift Range.—Coalbrookdale Co., Ltd., 240, L.
Tilt Fire.—Coalbrookdale Co., Ltd., 240, L.
TLB Bricks.—Thomas Lawrence and Sons, 152, G.
Triumph Mortising Machine.—Wilson Bros., 8 B.
Tudor Steel Casements.—Henry Hope and Sons, Ltd., 93, E.
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Vitrography Tracing.—Norton and Gregory, Ltd., Bay 1, gallery.
Veritone Stain.—Pinchin, Johnson and Co., Ltd., 115, F.
Victoria Mixer.—Stothert and Pitt, Ltd., 33, C.
Vitrabine Enamel.—John Line and Sons, Ltd., 54, D.
Vitolite Paint.—Walter Carson and Sons, 222, K.
Wal Pa Mur Water Paint.—Arthur Sanderson and Sons, Ltd., 114, F.
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THE EXHIBITS.

(First Notice.)

The Expanded Metal Co., Ltd. Stand 156, Row G.

Expanded Metal Reinforcement.

The Expanded Metal Company, Ltd., of London and West Hartlepool, have erected a stand of unique construction so far as exhibitions are concerned. The stand is situated near the Addison Road entrance, the position that the Company has occupied for its exhibits at previous exhibitions at Olympia. The exhibit is of reinforced concrete throughout, no structural steel framework having been used, and it shows on a limited scale the application of the Expanded Metal Co.'s well-known expanded steel reinforcements for concrete work and expanded metal lathings for plaster work. It comprises full-size examples of reinforced concrete column footings, columns, beams, stairs, floors, arches, and roofs, the whole being in the form of a building as shown in the accompanying illustrations, from one of which it will be observed that this stand was the scene of the opening ceremony. The method and arrangement of the reinforcement is clearly displayed. The well-known Diamond Mesh expanded steel, together with a more recent product—Rib Mesh expanded steel—is used as reinforcement for floors, walls, and stairs, while expanded steel bars are used for columns, beams, etc.

A hollow and a solid monolithic plaster partition on the Expanded Metal system are shown, together with a novel application of a suspended ceiling to a reinforced concrete floor.

The exhibit shows incidentally that, if skilfully handled, reinforced concrete on the Expanded Metal system is an exceedingly rapid method of construction. The shuttering, or timber form work, was commenced on Monday, April 10th, and was removed and the stand made ready for the opening day, April 22nd, within thirteen days in all, including Sunday and the Easter holidays. The system which has been frequently described and illustrated in this Journal, is in use in all parts of the world, and has a practically unlimited range of utility.

Sissons Bros. and Co., Ltd. Stand 108, Row F.

Decorative Materials.

The two apartments which form the main feature of this stand are decorated in different but equally beautiful styles. The larger room, measuring 10ft. by 10ft., is in Adam style, reminiscent of old Adelphi, and the small room, 16ft. by 10ft., is embellished in Louis XV. style. The two rooms give a comprehensive idea of the fine effects obtained in the decorative treatment of panels, walls, and ceilings by the various materials manufactured by this firm. The key-note to the decoration in the larger room is flatted white, with a very delicate harmonious colour scheme introduced into the panelling, the colour adopted being green. The elaborate fireplace, which is 8ft. in height, has been specially designed with an arrangement of shelves, and is used to display sample tins of the various enamels and paints, etc., used in the decoration. The room is comfortably furnished for the convenience of visitors to the stand. It is lighted from an oval glass panel over the door, and electrically with suitable ornamental fittings from the centre panel.

In the small room the colour contrasts are pleasingly arranged on a white back-

ground. The ceilings in both rooms show distemper work upon Adam swags, and patterns of attractive design. The exterior of the stand is tastefully panelled throughout in Adam style, and treated with Hall's distemper in various shades. There are two entrances, the principal one being surmounted by a cornice with round columns decorated with Hall's distemper, the doors being treated with Orientolac. The address of this firm is 199b, Borough High Street, London, S.E., and there are also offices at Hull.

Doulton and Co. Stand 113, Row F; and Stand 137, Row G.

Sanitary Fittings.

Too much attention cannot be given to the question of what sanitary fittings shall be used in carrying out any new works or improvements to existing buildings; and in addition to providing for the most stringent regulations of the sanitary authorities, artistic design and neatness must not be forgotten. Therefore any time spent in the study of exhibits in this class is more than repaid by the additional knowledge one gains of what can be obtained nowadays.

Messrs. Doulton and Co., Ltd., have an extensive exhibit of the most modern and improved sanitary appliances suitable for all and every class of building. A portion of their stand in the main building is arranged into five bath-rooms—a central large one, known as the "Vulcan," having four others grouped around it, and

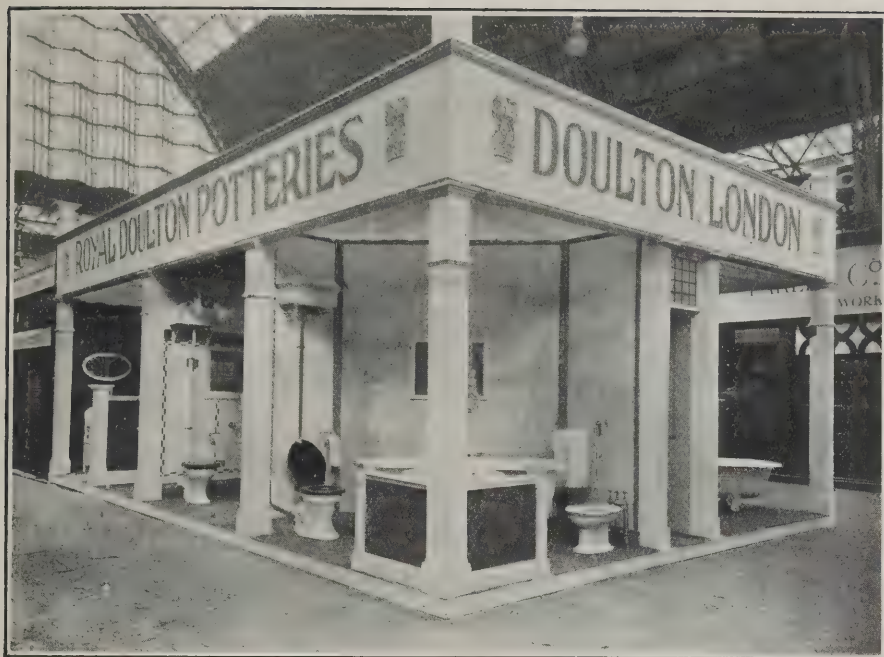
each represents a different style. The decoration in walls in the central bath-room is in Pompeian style suitable for a modern mansion. The bath, lavatory, sitz bath, and closet are all of white glazed fireclay, and, while massive in appearance, are simple in design. The closet is flushed by a water-waste-preventing valve (instead of a cistern), which can be regulated to discharge any desired quantity of water, and is approved of by the Metropolitan Water Board. In the bath-room which is lined with white-veined marble, the bath, lavatory, and closet have a raised decoration known as the "Doulton" design, and the bidet is decorated to match the rest of the glazed ware. The fittings in this room are more decorative than those previously described. Where the former would perhaps appear too severe for some tastes, this bath-room shows a richness of effect that is attained without the decoration in any way affecting the efficiency of the various appliances.

Another bath-room shown is suitable for an ordinary house, economy being shown to be consistent with a complete equipment. Those wishing to equip a small villa or bungalow will find their requirements met by the fifth bath-room, called the "Villa," where may be seen everything that is absolutely essential for a bath-room, without the additional accessories and elaborate decorations shown in some of the other rooms.

Special attention is directed to the smooth glossy surface of the enamelled



THE STAND OF THE EXPANDED METAL COMPANY, LIMITED.



THE STAND OF DOULTON AND CO., LTD.

ware, particularly in regard to the cast iron. Other sanitary appliances—such as the sinks (both housemaid's and slop, etc.) are shown on Messrs. Doulton's other stand, which is devoted to a more general exhibit of their specialities, such as closets, lavatories, urinals, etc.

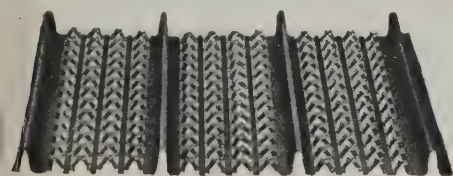
The statuary marble lavatory is provided with an entirely new pattern waste, the valves fitted being made perfectly plain without any corners or ridges on which dirt might accumulate; and the design is such as to be readily accessible for renewal of seatings as desired. The firm's address is Albert Embankment, Lambeth.

The Trussed Concrete Steel Co., Ltd. Stand 153, Row G.

Kahn Bars and Hy-rib Lathing.

This exhibit comprises two individual methods in the reinforcement of concrete. A Kahn bar lintel is shown with the steel exposed; and with regard to this it is interesting to note that architects were mainly instrumental in bringing about the proper reinforcement of lintels, to which purpose the Kahn trussed bar is peculiarly adapted. A specification and a table of loads and requirements were accordingly drawn up by this firm, and the practice of reinforcing lintels is now becoming general. Probably the most important exhibit at this stand is a beam and cantilever supported on columns, and both bearing concentrated loads. The beam is 14 in. by 6 in. and 12 ft. long, and contains a 1-1 in. Kahn trussed bar. The bar is exposed throughout the length of the beam, and affords conclusive evidence of the fact that the system is independent of adhesion, and shows also the mechanical bond of the bar. The cantilever itself is 5 ft. in length.

Hy-rib, which is a self-centering reinforcement, is adapted to use in roofs,



HY-RIB LATHING.

floors, walls, partitions, etc., and consists of a perfect steel lath surface stiffened by rigid high ribs. The ribs and the lath are manufactured from a single sheet of steel, making it a complete unit of lath and studs. Hy-rib is fully represented on



THE STAND OF THE TRUSSED CONCRETE STEEL CO., LTD.

the stand, there being shown, in addition to a loaded test slab and a partition, the method of spanning the space between the joists of floors. This is demonstrated by three models: (1) showing a slab launched at the supports; (2) arched between rolled-steel joists; and (3) flat on the bottom flanges. The use of Hy-rib in floors, as these models show, is at once simple and effective. The reinforcement is laid over the supports, the lath side poured in from above. The concrete flows through the lath surface only sufficiently to secure a perfect clinch on the steel, and the plaster is applied directly to the under surface.

Candy and Co., Ltd. Stand 164, Row H.

"Devon" Fires, Tiles, etc.

"Devon" fires in glazed briquettes, tiles, and faience work, with wood mantelpieces of handsome design and wrought hand made metal interiors are here shown, as well as samples of impervious white, coloured, and salt-glazed bricks in leadless glazes, "White" City embossed tiles, and plain quarries, also buff vitrified paving bricks suitable for stables, etc. The firm's address is 87, Newman Street.

Sam Deards. Stand 239, Row L.

Patent Glazing, Patent Block-making Machine.

The firm of Sam Deards, iron-roof constructors, horticultural builders, and hot-water engineers, contractors to H.M. Government, show examples of their patent "Superior" glazing for all kinds of large glass roofs, such as railway stations, markets, factories, rinks, and garages, as well as their patent "Victoria" glazing for all kinds of greenhouses and conservatories. They are also exhibiting Smale's patent rapid block-making machine, by means of which it is possible to make 1,000 blocks, 18 ins. by 9 ins. by 4½ ins., at 30 per cent. lower cost than brickwork. Using these blocks, it is possible to build a cottage having two rooms and scullery for £80, or one with four rooms and scullery for £120; or a five-roomed cottage for £145. The firm's works are at Harlow, and their London address is 88, Chancery Lane, W.C.

Godfrey Giles and Co. Stand 127, Row F.

Interior Decoration Schemes and Materials.

This stand consists of a Georgian garden pavilion in fibrous plaster and compo. The interior is arranged as a suggestion for a dining-room, or billiard-room, or lounge, and the original treatment in wall-paper schemes includes the use of Tekko (the Godfrey silk wall covering) and Salubra, and Salubra enamel, for which this firm are the sole agents for the United Kingdom for railway and steam ship companies, hotels, etc. The firm's addresses are:—18, Old Cavendish Street, W., and 16, Foubert's Place, W.



THE STAND OF THE KLEINE PATENT FIRE-RESISTING FLOORING SYNDICATE, LTD.

**The Kleine Patent Fire-Resisting
Flooring Syndicate, Ltd. Stand 117,
Row F.**

Fire-Resisting Construction.

This firm's stand consists of a small steel-framed building, with floor, roof, and walls, all constructed of reinforced hollow bricks.

The floor slab shown consists of patent reinforced hollow bricks, with closed ends, reinforced both ways, 6in. thick, measuring 20ft. by 20ft. in each direction, forming a perfectly level ceiling with no girders or beams protruding. In the same construction a sloping mansard roof of reinforced hollow bricks, with dormer windows, is shown.

The reinforced hollow brick outside walls are, it is manifest, particularly suitable for steel frame buildings, or any strong, reliable construction where lightness, insulation, and fire resistance are of importance.

The fire-resisting and insulating properties of the materials used are obvious, as is the suitability of the system, not only for large steel-framed buildings, but also for schools, and even for country cottages. In this respect the exhibit will command very special attention, more particularly with regard to the construction of schools—a subject which, as our readers are aware, is being much canvassed in view of the recent report of the Parliamentary Commission appointed to enquire into the possibility of adopting modern materials. This enquiry has served the very useful subsidiary purpose of stimulating general interest in fireproofing building construction, and recent disastrous fires in remote country districts further emphasise the value and importance of such materials as are shown at this stand. Country houses, cottages, and bungalows, often situated at distance of many miles from the nearest fire brigade, ought to be protected in every possible way from the

possibility of outbreak, and the Kleine system, being adaptable to so wide a range of buildings, affords a very valuable means of affording effective safeguards against calamities of this kind. Hospitals and asylums are also very often situated at a considerable distance from external aid, and for this and for other very obvious reasons it is essential that they should be fully protected; and for such institutions the Kleine system is of proved worth as a reliable form of fire-resisting construction.

This firm have now been established in this country for six years, are contractors to H.M. War Office and Office of Works, and are now engaged in carrying out some very large contracts. The firm's address is 133 to 136, High Holborn, W.C.

**G. R. Speaker and Co. Stand 103,
Row E.**

Artificial Roofing Slates.

"Eternit" is the name of an artificial roofing slate which, since first placed on the market about seven years ago, has rapidly secured a reputation for excellence of quality and durability. Innumerable schools, barracks, Territorial drill halls, aeroplane sheds, hospitals, churches, railway stations, villas, factories, and warehouses figure prominently in the long list of contracts carried out by Messrs. Speaker and Co. "Eternit," while of solid and substantial appearance, has the additional advantages of being fire-resisting and extremely light in weight. The slates are only one-quarter the weight of natural slates, and from one-fifth to one-sixth of the weight of clay tiles, thus rendering possible a considerable saving in the spacing and size of rafters.

Being to all intents and purposes an artificial stone turned out under a pressure of 1300 tons per slate, its enormous mechanical strength is, if anything, enhanced by atmospheric influences, which increase its strength to the toughness of steel. "Eternit" tiles may be fixed direct to steel roofs by a special system of spacing angle irons at from 11 in. to 13 in. centres.

"Eternit" slates have been used extensively in oversea countries, and a number of bank and government buildings, large mission stations, bungalows, etc., have been carried out in various parts of the world, while practically most of the recent additions in the way of railway stations, locomotive sheds, power stations for the Brazilian, Argentine, and Chilean Railways have used "Eternit" in their roofing construction, and "Eternit" sheets for lining the underside of roofs. The latter represent another variety of the "Eternit" process of manufacture, viz., "Eternit" sheets supplied in slabs measuring 8ft. by 4ft., or 4ft. by 4ft., or 6ft. by 3ft., by 3/16in. or 5/16in., and used largely for lining ceilings and facing walls or even the construction of entire buildings. They are light, of great mechanical strength, and their cost is comparatively low. Full particulars can be obtained from Messrs. G. R. Speaker and Co., of 29, Mincing Lane, London E.C.



SCHOOLS BUILDINGS ROOFED WITH "ETERNIT" SLATES.

**The Associated Portland Cement
Manufacturers (1900), Ltd.
Stand 118, Row F.**

Cement Manufacture.

The Associated Portland Cement Manufacturers, in addition to the usual display of their various well-known brands of Portland cement, etc., are exhibiting a complete set of cement testing apparatus as defined by the revised British Standard Specification, and practical tests are carried out daily at the stand. The firm is also showing an hydraulic crushing machine which was manufactured in their engineering shops from their own design. The machine crushes specimen cubes of 50 sq. centimetre area; and the gauge, which reads up to 50 tons, gives tons of total pressure on specimen, tons per sq. foot, kilos per sq. centimetre, and lbs. per sq. inch on specimen. Cubes of various ages and mixtures are provided and crushed in the machine. This exhibit, in view of the increasing attention which is being paid to the crushing strength of cement and concrete, is one of unusual interest. The address of the Associated Portland Cement Manufacturers is Portland House, Lloyd's Avenue, London, E.C.

**Stothert and Pitt, Ltd. Stand 33,
Row C.**

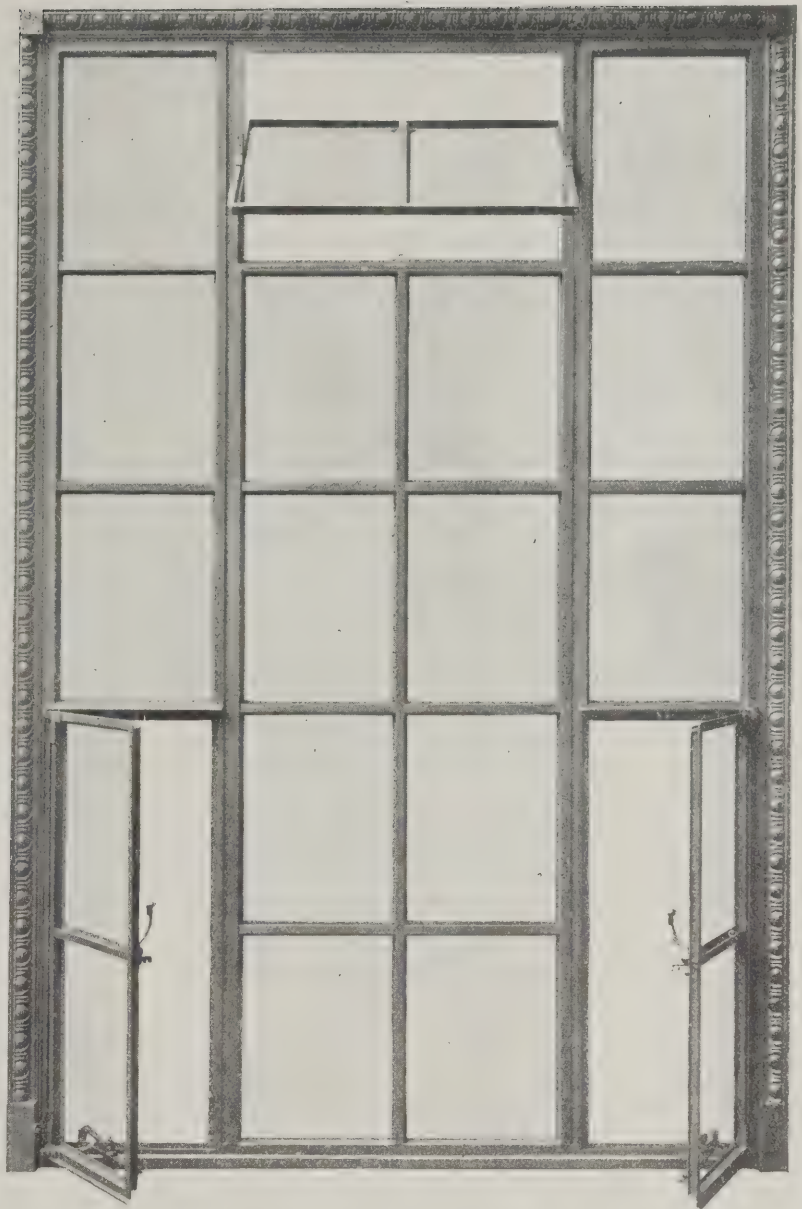
Concrete Mixers.

The exhibits at this stand include a No. 1 size Smith mixer mounted on skids and driven by an electric motor. An automatic side loading device is also fitted, and the plant includes a small tar receiving tank. It should be mentioned that the Smith mixing plant comprising the above forms a complete plant for mixing tar macadam; by substituting a water tank for the small tar tank the plant is then suitable for mixing concrete. There is also on view a No. 0 size "Victoria" mixer mounted on a portable truck and driven by an electric motor. This plant is also fitted with an automatic side loading device for feeding the machine; and a water tank of suitable capacity is fixed above the mixer drum. While specially suited for mixing concrete it can also be used for mixing other materials. Messrs. Stothert and Pitt, whose address is 53, Victoria Street, Westminster. S.W., are exhibiting in conjunction with the T. L. Smith Co., 11, Victoria Street, Westminster.

**Henry Hope and Sons, Ltd.
Stand 93, Row E.**

Glazing Specialities, Cast Leadwork, etc.

This stand takes the form of a room constructed of special bricks supplied by the Daneshill Brick Works, with a complete mullioned window on one side, fitted with Messrs. Hope's patent "Tudor" steel casements and leaded lights, as an example of a window for the best domestic work. On another side is fitted a large window of a character suitable for public buildings and office buildings of importance. It is constructed entirely of steel, and is eminently suitable for high-class fireproof buildings. On the same side are two large casements (one side hung, the other hung on vertical pivots for cleaning), glazed with single sheets of plate glass. On the third side (which forms the entrance to the stand) are fitted four polished steel kupronised doors, glazed with fireproof polished glass. These four doors are part of a large contract for Messrs. Whiteley's new premises, Bayswater, of which Messrs. Belcher and Joass are the architects. The roof of the room is glazed with Hope's patent imperishable glass roofing, with lead-covered steel bars and patent copper fixing shoes.



STEEL CASEMENT WINDOW BY HENRY HOPE AND SONS, LTD.

Among the further examples of window construction inside the pavilion are a large door casement, glazed with leaded glass, suitable for garden entrances, etc., for private houses, and an office building window with two side hung casements and transoms, of which a large number are being constructed to take the place of wooden sliding sashes. The proportions of size are about the same as generally employed for sliding sashes, and this window is therefore particularly adapted for buildings where the window openings are about 8 ft. high by 4 ft. wide, or of similar proportions. The chief advantage claimed over sliding sashes is that with the casement, ventilation is under perfect control, according to the direction of the wind, as, by the use of special gear, the opening may be of any desired degree. The firm are also exhibiting some examples of their cast-lead work, and some rainwater heads and pipes: also examples of their door furniture and bronze fittings. The firm's address is 55, Lionel Street, Birmingham.

**Chance Brothers and Co.
Stand 62, Row D.**

Decorative Glass and Glazing.

This firm show a most attractive display of vitreous glass for walls, floors, fireplaces, etc., of panels showing tile schemes in various colours and sizes and of wall and floor mosaics in similar material. They also exhibit casements glazed in

Flemish glass in large and small patterns—a distinctive type of ornamental glass, of an elegance and effectiveness that render it eminently suitable for the best class of work. Some small lights with Old English crown glass and genuine crown bullions convey the reminder that this glass is still made (but, it is stated, only by the exhibitors) by the actual process in vogue in mediæval times. What we are shown, therefore, as architects in particular will be glad to note, is the genuine Old English crown, which has never been surpassed for the smoothness and brilliancy of its surface.

Samples of extra white double rolled cast glass, specially adapted by its pure whiteness for studios, picture galleries and for the finest work in roof glazing, where the best attainable light, and freedom from colour, are of paramount importance, will be examined with great interest; and the samples of muffled, figured, rolled, cathedral, plain rolled and rough cast plate and other glass, make a very wide appeal, the specimens exhibited suggesting an extraordinary range of utility; decorative glass being at the present day more extensively used than ever before in the history of building. The firm's address is Glass Works, near Birmingham.

On this stand is also shown the MAXimum Daylight glass, supplied by the MAXimum Light Window Glass Co., of 28, Victoria Street, S.W.

Thomas Lawrence and Sons.**Stand 152, Row G.***Brick and Tile Manufactures.*

A pavilion of Georgian character affords an opportunity of exhibiting in contrast the bright T.L.B. rubbers and sand-faced facing bricks, both in ordinary London stock size and in zin. thin bricks. This exhibit being erected on an island site the whole four sides are well seen, and the exhibitors have ventured, therefore, to use different kinds and colourings of bricks and roofing tiles for each of the elevations, particulars of which will be found in the catalogue.

The interior is mostly lined with orange red hand-made and hand-pressed sand-faced facings, which have been largely used for interiors of churches, public buildings, etc., where best red brickwork was required.

A feature of the exhibit will be daily exhibitions of cutting and rubbing these bricks, ready for setting in buildings, thus demonstrating the ease with which T.L.B. rubbers can be worked and the fineness of texture and regularity of colouring. The address of the firm is Bracknell, Berks.

Ronuk, Ltd. Stand 116, Row F.*Sanitary Treatment of Floors.*

This stand is built entirely of oak, and the entire surface has been prepared and polished with Ronuk. This preparation, when used as a floor polish, fills up the pores of the wood, producing a hard, bright, durable surface, where germs find no lodgment, while the surface can be kept cleansed with but little labour and cost, dry rubbing with a weighted floor brush, and the occasional addition of a little Ronuk, sufficing to preserve a slightly and sanitary surface. It has an agreeable odour, and, combining as it does the qualities of a polish and an antiseptic, it is in use in many hospitals and other public institutions. The firm's head office is at Portslade, Brighton, the London address being 16, South Molton Street, W.



THE STAND OF PINCHIN, JOHNSON & CO., LTD.

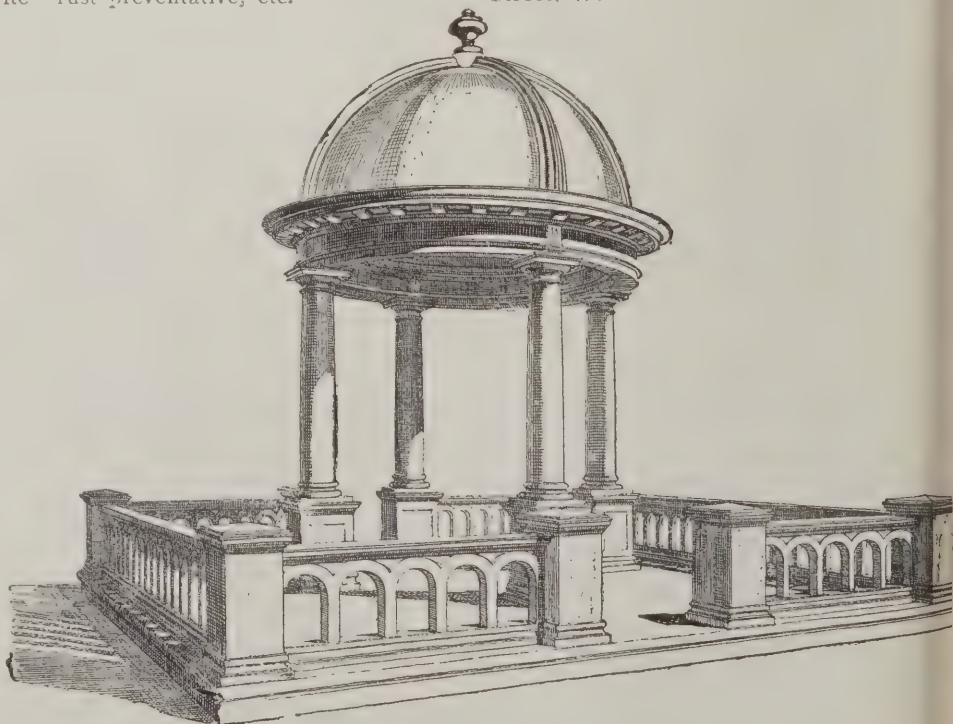
**Pinchin, Johnson and Co., Ltd.
Stand 115, Row F.***Paints, Varnishes, and Distempers.*

Some time ago, through the medium of the standard colour competition, Messrs. Pinchin, Johnson and Co., Ltd., of 26 and 27, Bevis Marks, London, E.C., invited architects, decorators, and other colour experts to decide upon a set of standard colours, and over 4,000 practical men gave their views. Therefore, the dedication of the firm's exhibition stand to "Minerva," the Goddess of Wisdom, is a particularly appropriate way of paying tribute to authoritative knowledge.

Specimen panels painted with the various whites and colours of "Minerva" paint are on view, showing in a most effective fashion the excellent finish given by this paint. It is guaranteed pure and durable. Full particulars and colour chart can be had upon request at the stand.

The columns and entablature of the stand are enamelled with "Satinette," gloss white and flat white respectively. The former has the beautiful lustre and perfect whiteness of choice old china, while the latter gives a soft matt surface that can be used for an entire decoration or as a relief to the gloss enamel. The charming effect produced by this contrast is shown in the "Satinette Corner." Practical men will appreciate the perfect flow and easy working qualities of this enamel, which has been used for some of the finest decorative work in the United Kingdom. "Deydo" distemper is exhibited on two planks, and the velvet like texture of the surface that this water paint produces merits attention. It makes a sanitary, washable, and durable decoration at a very moderate cost. A special book of designs, shade cards, etc., can be obtained at the

stand. The specimens of panelling stained with "Veritone" and flat varnished will be examined with interest by those who have had to face the difficulty of getting really good effects at commercial prices. "Veritone" can be used as a graining colour, a stain, or a glaze. There are also on view samples of work done with other specialties and goods manufactured by this firm, i.e., "Silveroid" (a silver paint), "Syronite" rust preventative, etc.



THE STAND OF RONUK, LTD.

Richard Johnson, Clapham, and Morris, Ltd. Stand 169, Row H.

Reinforced Concrete Specialities.

At this stand there is a practical display of reinforced specialities for concrete and brickwork.

To demonstrate the increase of strength attained by reinforcing a wall with the patent "HB" reinforcement, a 9-in. hollow wall has been built, supported only on two piers roft. apart, with a cantilever portion hung over. This wall is shown carrying a superimposed load on both span and cantilever portions.

A 9-in. hollow wall consisting of a 4½-in. outer wall, a 1½-in. cavity, and a 3-in. inner wall, reinforced in the horizontal joints, is considerably stronger than an ordinary 14-in. wall, and is, moreover, sound-proof and damp-proof. The keyed-on stirrup and hoop for beams and column reinforcement are also shown. This means of attaining a rigid adjustable stirrup is practical and economical.

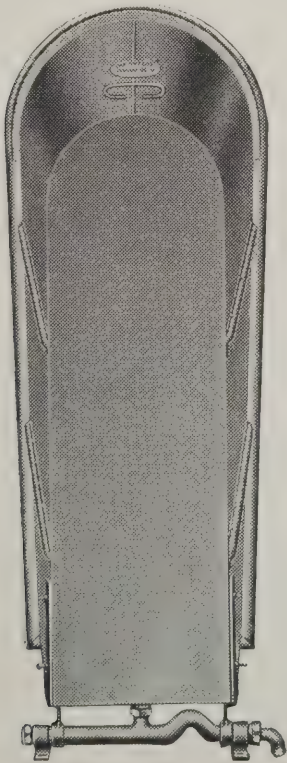
Another speciality of this firm (whose address is 24 and 26, Lever Street, Manchester) is shown in the display of concrete floor slabs reinforced with wire lattice, which consists of fabric having longitudinal or tension wires of high quality steel wire, across which are interwoven transverse binding wires. This reinforcement is notable for the facility with which it can be laid, and the quality and strength of the wire to resist tension.

Wire guards for lifts are also shown.

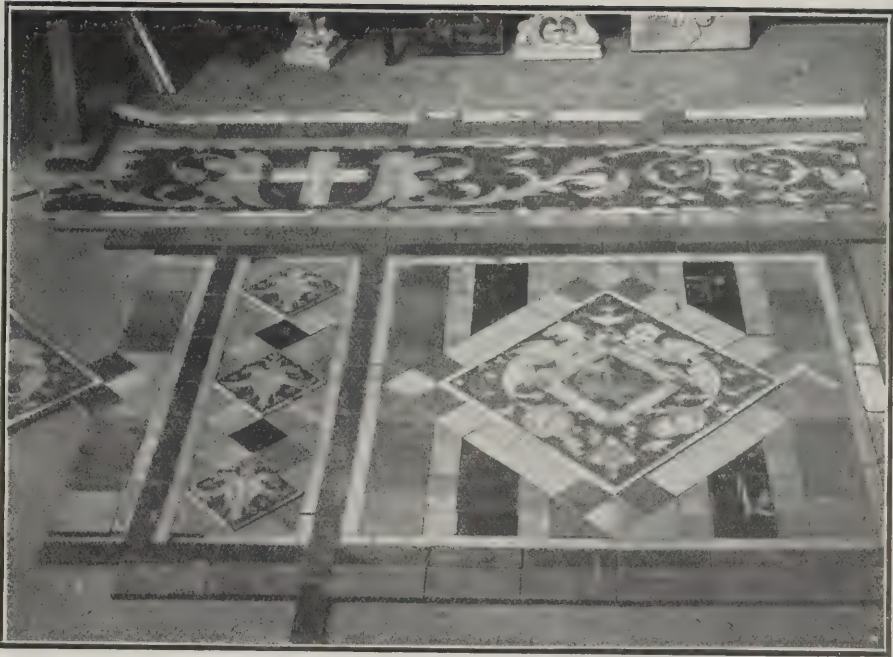
**The Patent Tip-up Bath Co.
Stand 50, Row D.**

"Space-saving Baths and Quick Heaters."

The installation of baths in cottage property was for years advocated without much success, not because the cottagedwellers did not desire them, but because of the great difficulty in finding room for them in small dwellings. With the advent of the tip-up bath, this difficulty was overcome, and there is no longer the slightest excuse for a bathless house, however small the accommodation. The tip-up bath is preferably so placed that when



PATENT TIP-UP BATH.



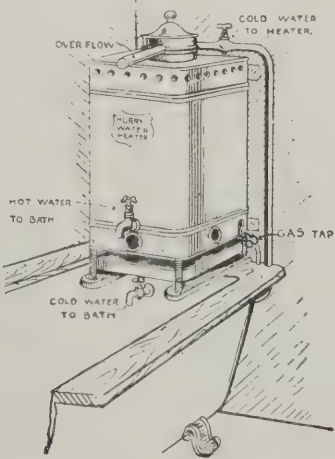
PORTION OF TILE FLOOR BY CARTER & CO., LTD.

in use it may be near the furnace or boiler from which the supply of hot water can be conveniently obtained, and after use it is "up-ended" into a box or cabinet, which occupies very little space. The baths, which are strong and durable, are made in three sizes, namely, 4 ft 6 ins., 5 ft., and 5 ft. 6 ins. long, and are of two grades of quality. The waste outlet is, of course, properly trapped, satisfying the most up-to-date by-laws.

The same firm are showing the "Hurry" water heaters, for which it is claimed that they occupy but little space, and by consuming a relatively small quantity of gas, are in this respect both economical in use and safe from dangerous fumes. They are complementary to the tip-up baths. The firm's offices are at 31, Broad Street, Birmingham.

**Wm. Mallinson and Sons.
Stand 1, Row A.**
Hardwoods and Veneers.

The exhibit comprises a selection of hardwoods used in the building trades, including wainscot oak, mahogany, teak, walnut, cypress, pitch pine, whitewood panel boards, Dominion white pine, American elm, Kauri pine, lacewood, maple, best yellow pine, also turned table legs in oak, cypress, etc., and oak floorings. The stand shows 56 panels of handsomely figured hardwoods, giving



THE "HURRY" WATER HEATER.

suggestions for panelling and high-class decorative work. A large variety of veneers of various hardwoods, and three-ply panel boards in various thicknesses and dimensions, are also on view, as well as some especially large countertops in mahogany, teak, walnut, etc., such as are required for banks, insurance offices, restaurants, and similar jobs. The firm's address is 130-138, Hackney Road, N.E.

**Carter and Co., Ltd. Stand 157,
Row G.**

Tiles, Terra-cotta, etc.

Messrs. Carter and Company, of Poole, Dorset (London office and showrooms: 29, Albert Embankment, S.E.), have an interesting exhibition of their well-known tiles, which are adapted for a variety of purposes; and, in addition to a display of ceramic, mosaic, constructional faience, and terra-cotta, they show a new material for building exteriors. This is called "Ceramic Marble," and is particularly appropriate for use in large towns where the chemical products of the atmosphere operate on building materials with destructive effect. The marble is light grey in colour and is easily cleaned. A new kind of tile flooring for churches is also on view, of which we give a reproduction. There are also numerous examples of glazed decoration in the style of panels; these being of tasteful design and very rich in colour. A number of fireplaces in various styles and colours are also exhibited.

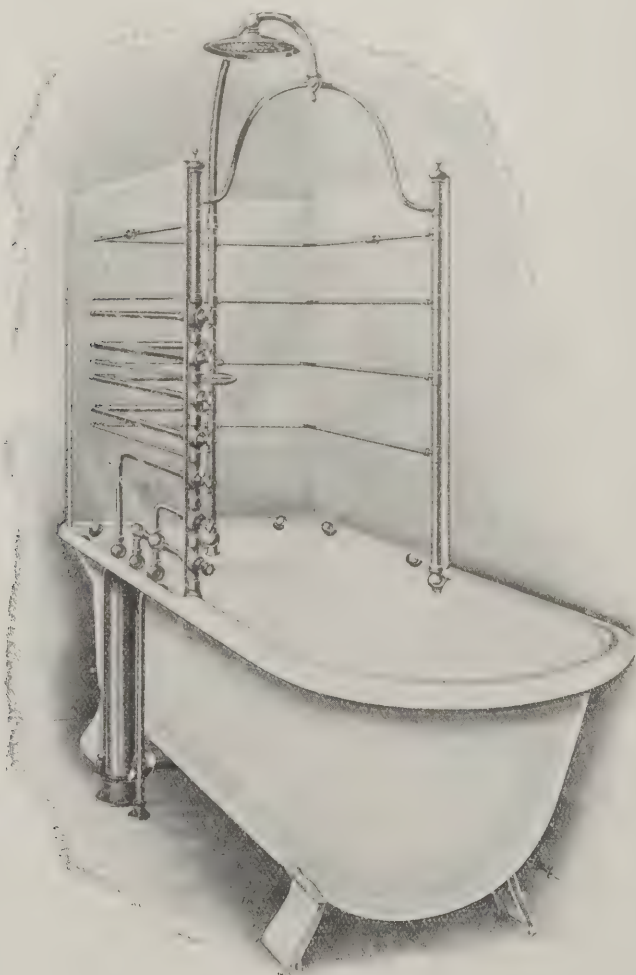
**Fredk. Jones and Co., Ltd.
Stand 124, Row F.**

Fire and Sound-proofing Specialities.

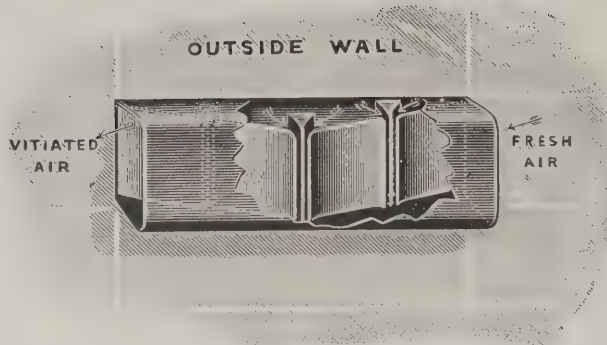
This exhibit consists chiefly of the "Hercules" fireproof partition blocks manufactured in Portland-concrete and plaster-concrete qualities. There is also a display of their fibrous plaster ceiling slabs, a substitute for lath and plaster. Slag wool, made up into various handy forms for use in connection with the building trade for sound, fire, and heat-proofing purposes is also exhibited. The firm's London address is Perren Street, Kentish Town, N.W.

John Bolding and Sons, Ltd.
Stand 200, Row J.*Sanitary Goods.*

Baths, lavatories, and w.c.'s form the nucleus of this exhibit, each section being represented by a variety of good examples. The "Cowdray" bath, which, with all the other fittings mentioned in this note, is on view at this stand, is of cast-iron porcelain enamelled, being parallel and with equal ends. All fittings are plated; and the bath, which has 1 in. valves with white lever handles, is equipped with many conveniences. The "Laydas" bath is fitted with plated spray tubes, wave and shower valves, and has also a plate-glass screen. Among the other baths on view are the "Erno" and the "Molton," the former being of porcelain enamelled cast-iron, and the latter of similar material, of considerable width and depth, and with a plated standing waste and hot and cold valves with lever handles. It is also equipped with a single and double towel-airer. A number of lavatories, with bathroom accessories and other goods, are also exhibited. The "Wigmore" lavatory has a "second statutory" marble top and plated fittings. Another lavatory is of the oval pedestal type, having the usual plated fittings with white lever handles and an oval base. The "Trone" lavatory is of white earthenware and of semi-circular form with a standard frame; and the "Skyval" has a polished marble top, an oval basin, and a mahogany frieze, the legs being of cabriole shape. Messrs. John Bolding and Sons, (whose address is Grosvenor Works, Davies Street, London, W.), are also showing a selection of their w.c.'s, which include the "Berkeley" pedestal type of w.c. having a white earthenware enclosure



BATH BY JOHN BOLDING AND SONS, LTD.



WRIGHT'S PATENT WALL VENTILATOR.

and mahogany seat. The trap for this may be fitted either above or beneath the floor. Two w.c.'s of the "Laydas" style are on view, both being syphonic and of pedestal form; the second example differing in some few particulars from the first, and having also a two-gallon capacity. A polished mahogany "Bolondo" commode chair is also on view, being fitted with a double-caned seat. A "Fios" white glazed fireclay w.c. with slop top, fireclay syphon cistern, etc., is also shown.

E. G. Wright. Stand 22, Row B.*Smoke Prevention and Ventilation.*

Mr. E. G. Wright's patent 20th century King chimney cowl, shown at this stand, is non-revolving, and is therefore free from parts that would be likely to get out of repair; its efficacy depending on a scientific arrangement of the openings, which

are so devised as to provide against all contingencies of wind and weather, and cause an up-draught from every direction of the wind. The patentee is able to show a large number of unsolicited testimonials to its efficacy, as well as a list of the Government, L.C.C., and other important buildings on which the cowl has done good service as a smoke-preventer. It is made of sheet metal. The "Excelsior" down-blow preventer chimney-pot is made in buff or red stoneware, as well as in sheet metal. The same inventor's "patent up-to-date down-blow preventer" is a more recent production, but is already in extensive use. It is particularly serviceable for keeping the air pure where gas geysers and gas stoves are in use. A modification of the principle is seen in the patent up-to-date room ventilator, which provides a simple but effective means of ventilating living-rooms, bath-rooms, railway carriages, tramcars, etc., without draught. Mr. Wright's works are at Guildford, Surrey.

Art Metal Construction. Stand 59, Row D.*Steel Office Fittings and Furniture.*

The steel fittings and furniture, including partitions, doors, counters, desks, etc., exhibited by the Art Metal Construction (Roneo, Limited), 26, Holborn Viaduct, E.C., is of special interest at the present moment on account of the growing demand for fireproof buildings. It is now possible, by means of special machinery for working steel, to produce panelled doors, wainscoting, and partitions, with moulding and all details, in accordance with the architect's plans and specification. The partition work exhibited is part of an installation at the extension of the head office of the London City and Midland Bank. The steel counter, which is enamelled in a pleasing shade of green, and enriched with bronze moulds of the egg and dart pattern, and bronze pilaster caps, demonstrates the fact that it is possible to imitate in steel the forms that are customarily rendered in wood. This work is all enamelled in various art colours, or grained to match mahogany, walnut, or any other of the natural woods.

The complete installation will include steel desks, steel cabinets, vertical letter files, and tables. Case work of this description is on exhibition. In connection with the vertical letter files, a special system for the filing of correspondence is shown. Steel fittings, in addition to protection against fire, have the further advantage of a greater capacity than wood for the same space. They are in no way affected by the changing climatic conditions, and consequently the steel drawers never shrink or warp in a manner to admit dust, nor swell so as to stick.

The Willesden Paper and Canvas Works, Ltd. Stand 170, Row H.*Willesden Underlining and Wall-covering.*

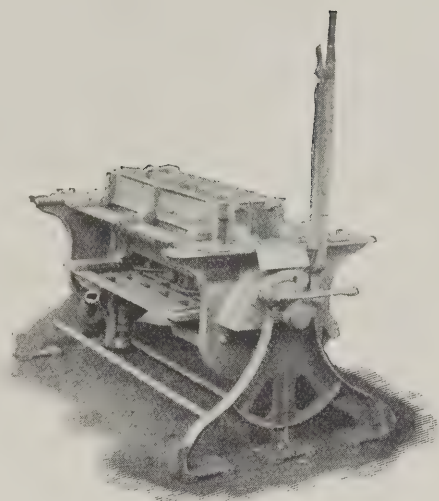
On this stand are demonstrated the principal uses of Willesden underlining and underslating, the roof of the stand being so constructed as to show the appearance of the underlining (beneath slates or tiles), on one side showing the open rafters and on the other side of the ceiling showing the method used in paneling the ceiling with waterproof 2-ply and 1-ply paper. The three sides of the veranda show the method of employing Willesden canvas on boards, forming a waterproof roof; while the front of the veranda shows use of the 4-ply Willesden paper as an ordinary veranda in the place of tin, sheet iron, or other substances. The third side shows other qualities and kinds of paper which can be used for panelling, or for building, etc. At the back of the stand are long panels showing numerous makes of canvas—brown, green, black, etc.—in various widths and qualities. The firm's London address is Willesden Junction, N.W.

The Ruberoid Co., Ltd. Stand 151, Row G.*Roofing and Flooring Materials.*

This stand is of an attractive character, the white joinery forming a pleasant contrast to the roof of the building, which is of green Ruberoid, and giving an excellent demonstration of the pleasant coppery green appearance of that material. The exhibit consists of full size models showing the practical application of Ruberoid roofing on flat and pitched roofs. The method of flashing, etc., is fully shown on these models. As showing the utility of this material, it is interesting to mention that some 130,000 square feet of Ruberoid roofing were used by Messrs. Lever Bros., soap manufacturers, on their new works at Durban, Natal, South Africa, whilst the portable buildings which were taken to the antarctic by the Scott expedition were built of identically the same material.

The methods employed and shown for weatherproofing concrete roofs are of particular interest to architects and engineers, owing to the development of this construction. A portion of the exhibit is devoted to Ruberoid dampcourse, which has, during past years, so rapidly increased in use as to become a leading speciality.

The "Giant" insulating papers are also fully displayed, and their uses in connection with cold storage for ship refrigeration are demonstrated.

**THE (U.K.) WINGET CONCRETE BLOCK MACHINE.**

The stand, as usual, is floored with Ruberoid flooring, which material is specially manufactured for use on concrete and brick floors, and for passageways and verandas exposed to the weather. Like Ruberoid roofing, Ruberoid flooring is manufactured in three colours—slate, red, and green, and is extremely durable. The Company have recently constructed new and extensive works at Brimsdown, Middlesex, and their products are all manufactured under the most careful supervision. In view of the increase in aviation in this country, it is worth remarking that Ruberoid has been used for roofing all the large garages erected by the German Government for housing the Zeppelin airships, and is also in use for similar purposes on the hangars at the Shell Beach, Sheppey, the Crystal Palace, and elsewhere.

Calmon Asbestos and Rubber Works, Ltd. Stand 29, Row C.*Calmon Asbestos Sheets.*

This firm's stand takes the form of a neat little asbestos bungalow, with exterior and interior walls and ceilings covered with "Calmon" asbestos slate sheets, and the roof covered with "Calmon" asbestos slate tiles. The sheets are fixed to a framework of uprights and cross pieces, and the joints of the exterior lining are covered with strips, thus giving the building a neat and attractive appearance, similar to half-timbered style.

Asbestos slate buildings are making great headway in the Colonies, where they

are gradually taking the place of corrugated iron, the non-conductivity of the asbestos slate, and the fact that it does not corrode by the varying influences of temperature, being strong points in its favour. There is also, the firm report, a daily growing demand for "Calmon" asbestos slate manufactures for the home trade, and hundreds of roofs of dwelling houses, skating rinks, drill halls, workshops, barracks, etc., are covered with these slates. The sheets are chiefly utilised for ceiling work and the lining of walls. Both for Colonial and for home requirements, the lightness of the material and the simplicity of fixing, as well as its fire-resisting qualities, impermeability to water, non-conductivity, tensile strength, and durability, are important recommendations. The firm's address is 1, 2, and 3, Trinity Place, Tower Hill, E.C.

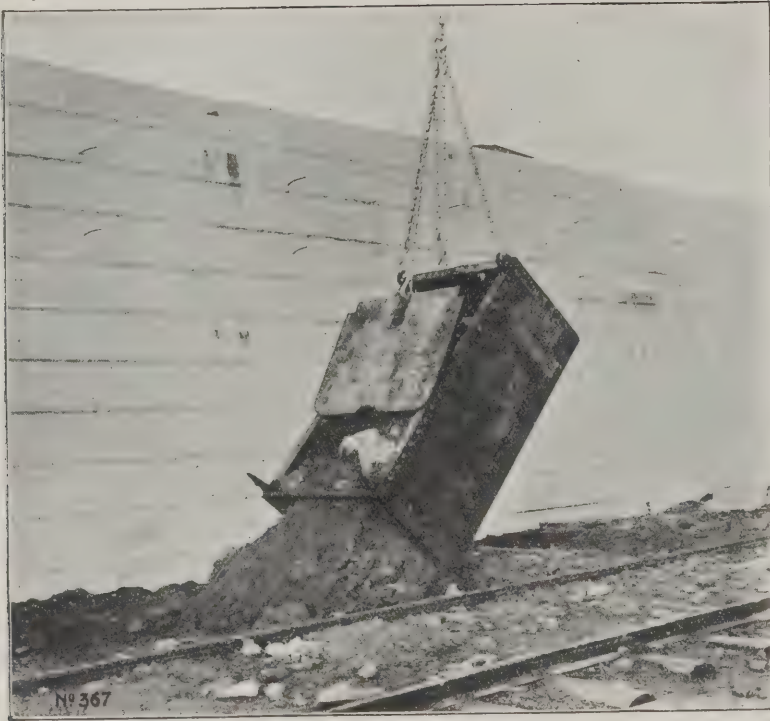
The (U.K.) Winget Concrete Machine Co., Ltd. Stand 187, Row J.*Concrete Mixers and Block-making Machines.*

This firm have taken a double stand, at which they are showing at work their latest improved No. 1 size "Express" concrete mixer working, and one of their standard 32 in. "Winget" machines. They are also showing two "Winget" partition slab machines, their latest patent. The method of manufacturing slabs and quoin blocks is clearly demonstrated, and various samples of walling and partition work, and of paving slab moulds and baluster moulds, are also exhibited. The firm's address is Newcastle-on-Tyne. They are contractors to H.M. War Office and Home Office, and to the Crown Agents for the Colonies.

Nostell Tile and Terra-cotta Works. Stand 202, Row J.*Terra-cotta and Constructional Faience.*

Here are shown several kinds of roof, floor, wall, and dado tiling, and there is a special exhibit of "Ceramo" tiles, which cannot fail to impress with their beauty and adaptation. The same observation applies to the selections of slatted tile panels and of modern fireplaces in slatted briquette. Some terra-cotta blocks of extra large size, such as have been used in artisans' dwellings for the Liverpool Corporation, are valuable as showing the adaptability of this material, which is rapidly coming into high favour for its constructional as well as for its decorative value. The company's representative is Mr. Frank Talbot, West Leigh, Walton, near Wakefield.

**THE STAND OF THE RUBEROID CO., LTD.****BUNGALOW ERECTED WITH CALMON ASBESTOS SLATE SHEETS AND TILES.**



TILTING SKIP BY RANSOME-VER MEHR MACHINERY CO.

Ransome-verMehr Machinery Co.
Stand 212, Row K.

Concrete Mixers, Testers, etc.

This firm, whose address is Caxton House, Westminster, is showing a new tar macadam mixer with feeding measuring hopper, steam-jacketed drum, fast pulley for belt drive, mounted on a channel steel frame, the capacity being 5 cu. ft. This machine embodies a number of novel and valuable features, among which may be mentioned:—(a) The special arrangement of the mixing paddles, which ensure the turning over of the batch laterally as well as longitudinally. (b) Provision of flat steel springs which keep the blades to their work but prevent any possibility of the aggregate jamming between the blades and the drum plates. (c) The method of discharge, which ensures rapid delivery of the whole batch, the paddles, while revolving, keeping the inside of the drum quite clean.

Another exhibit is a No. 00. concrete mixer, with charging measuring hopper, automatic water tank, with a fast and loose pulley for belt drive. The batch is 2 cu. ft., and the mixer is capable of an output of 20 cu. yards per day.

A new hand mixer, with a 2 cu. ft. batch is also on view. It has a tilting measuring skip, and is suitable for concrete, tar macadam, asphalt or mortar.

The A, B and C types of corrugated steel sheet piling are shown in various thicknesses and lengths, with driving caps and corner pieces. A recent device for the improvement of concrete construction is the Ransome vibrator, for vibrating concrete in situ; and the sand spreading machine which is exhibited should be of considerable interest to surveyors, as it is designed for the uniform distribution of sand or grit on roads, foot-paths, wood-paving, etc., and can be handled by one man.

Among other exhibits are a new cement testing machine (Smith and Edwards' Patent), with registering indicator, and a self-discharging skip, for depositing excavated material and concrete automatically above or below water.

The Premier Re-forming Co., Ltd.
Stand 130, Row F.

Applications of India-rubber.

The goods at this stand demonstrate the possibilities in extending the life of rubber by a patent system of re-forming, which, to all intents and purposes, enables the inventors to take a piece of what would appear to be worthless rubber and re-form it into all kinds of articles apparently as good as new. Amongst other things at this stand are piles of re-treads made from old motor tyre strippings. Old motor inner tubes are made as new at about half the usual cost of the original article. The re-formed india-rubber door-mats bear no trace of having been kicked and broken in pieces. Engineers will probably be interested in the valves and buffers re-formed from old ones that have been crushed and battered beyond recognition. The Company have supplied most of the leading firms of rubber users in the country, who number over 280 in all. Amongst the artistic goods



VIEW SHOWING CORRUGATED SHEET
PILING OF RANSOME-VER MEHR
MACHINERY CO.

are displayed a choice selection of india-rubber tiling, in various colours and designs; and many other specialities are on view.

The works of the Company are at Black-horse Lane, Walthamstow. Dr. Schidrowitz is chemist to the Company, and Mr. F. L. Rawson is the consulting engineer.

The Brilliant Sign Co., Ltd.
Stand 57, Row B.

Advertising Signs, Tablets, etc.

The Brilliant Sign Company, of 38, Gray's Inn Road, London, W.C., are exhibiting a range of advertising tablets in the "Brilliant" metal letters, which have now become so familiar a feature of street frontages. The letters are stamped up out of sheet copper, and are proof against warping, splitting, and discoloration. Being hermetically sealed to the back of glass, the original brilliancy of the gilding of these letters is retained for a very considerable period. The letters are stamped with steel dies, and gilded with 23 carat English gold leaf. The type of letter which is known as the "original" letter has a segmental corner block (V shape in section), and is used exclusively for attachment to the inside of glass, for windows, facias, stallplates, tablets, hanging signs, etc. A wide variety of styles in letters are manufactured in the "Brilliant" process, ranging from the plain angular Roman form to highly ornate examples. Facsimile designs, coats of arms hand-painted in correct heraldic colours, monograms and emblematical designs are all produced in the Company's process. Trade marks of infinite variety and plate glass facias in both "Brilliant" letters and incised wood are now manufactured; and of the last-named material, a letter of hollow section is the latest adaptation. The firm is exhibiting specimens of large facia work, letters of gilt wood, enamel, and brass, and sections of shop-fronts in brass and other metals, stallboards, tablets, swing signs, etc. There are also on view embossed and illuminated signs, and all classes of decorated glass work, together with novelties in up-to-date shop fittings. The Brilliant Sign Company claim to be the only firm in the world possessing steel dies for the perfect and economical production of the "Brilliant" letter.

The Seyssel and Metallic Lava
Asphalte Co. Stand 31, Row C.

Paving Materials, etc.

The Seyssel and Metallic Lava Asphalte Co., of 42, Poultry, E.C., who have been established over 35 years, are again showing the specialities to which they devote their attention, and which comprise "Seyssel" and other natural rock asphaltes, for building works, pavings, etc., and "Metallic Lava Asphalte," for dampcourses, floors, and indoor use. There are models of Seyssel asphalte, laid on grooved and tongued boarded roofs, indicating the proper method of treatment of eaves gutters, a section of a valley gutter as usually occurring between north lights, and a similar model for parapet gutters. Samples of the natural rock asphalte before being melted, also of the mastic asphalte, are to be obtained from the stall, and there are also on view samples of the "Tenoped" paving blocks, suitable for pavings which are subjected to heavy traffic, tar paving, and the ordinary mastic block properly branded. A list of works successfully completed, together with the literature upon the matter, and comparison of prices with other materials, can be had upon application.

**The Armoured Tubular Flooring
Co., Ltd. Stand 213, Row K.***Reinforced Concrete Flooring.*

This company exhibit their patented speciality in reinforced concrete fireproof flooring in a variety of standardised forms which have been successfully used in varied applications. The A.T. floor is built up of reinforced concrete webs, having shoulders formed upon them for the support of concrete tubes, which are so shaped that the finishing top layer of concrete combines with the webs. Close-boarded centering is therefore unnecessary with this system, which admits of advance preparation of the parts and rapid construction on the site.

Sections are shown which are applicable up to clear spans of 30 ft., as well as a variety of methods for finishing the upper and lower surfaces of such flooring, with secondary use of hollow tubes for ventilation and wiring. The formation of floor trenches, and the method of trimming for lift or other openings in floors, and the attachment of fittings fastened to ceilings, are also demonstrated.

The fireproof qualities of the system are officially guaranteed by the "full protection" certificate of the British Fire Prevention Committee; its design conditions conform to the requirements of the highest standard (including the R.I.B.A. rules); whilst its use has been adopted by H.M. Office of Works, the leading municipal and county council authorities, the chief railway companies, and a large number of the principal architects of the United Kingdom. This system was awarded a gold medal at the 1910 Brussels Exhibition. The firm's address is 53, Victoria Street, Westminster.

**F. and C. Osler, Ltd. Stand 168,
Row H.***Electric Fittings.*

Messrs. Osler show a comprehensive selection of electric fittings, which, essentially English in character, embrace styles ranging from Gothic periods down through the Elizabethan and Stuart to late Georgian times. A finely executed electrolier in wrought iron, possessing all the qualities of the best period of fifteenth century Gothic, and a dining-room corona fitting, also in wrought-iron, both afford evidence of a most careful study of Elizabethan strap-work.

A two-light sconce, exquisitely modelled and chased, and finished to represent old silver, represents the Stuart

period, while in late English Renaissance style are some charming adaptations of old silver work. The needs of the decorator appear to have been carefully considered in the creation of types that will harmonize with the various eighteenth century styles associated with the names of Chippendale, the brothers Adam, Sheraton, and others.

In the revival of crystal glass candelabra as a means of decorative lighting, Messrs. Osler's experience of over a century places them in a peculiarly favourable position, and they have reproduced some very beautiful models—among them that of a fine old Waterford glass chandelier.

In dealing with the metal filament lamps which are now so much used, the firm have applied with excellent effect their long experience as makers of glass, and many examples of exquisitely cut glass bowls, mounted in metals, prove how satisfactorily the glare from these lamps can be converted into a perfectly diffused light.

The entire exhibit is eloquent of the enterprise of the firm, the versatility and re-

sourcefulness of their art director, Mr. Herbert Pepper, and the skill of modern craftsmanship. The firm's address is 100, Oxford Street, W.

**Muribloc (Partition Slabs), Ltd.
Stand 89, Row E.***Fireproof Partitions.*

The slabs upon which this firm specialise are manufactured with clean crushed specially selected clinker and the best British Portland cement, which are gauged to a set standard; the patent mixing and manufacturing machinery, invented for the express purpose, ensuring the production of perfectly uniform slabs, which are guaranteed to be free from expansion or contraction after fixing. The crushing stress of $4\frac{1}{2}$ in. slabs, as certified by Messrs. David Kirkaldy and Son, is 28 tons per square foot, so that the slabs are eminently suitable for the construction of weight-carrying or other partitions, and may be used for the complete construction of bungalows, garages, pavilions, etc. Special light slabs are manufactured by the same process, but with pure crushed pumice instead of clinker. The firm's address is Prince's Wharf, Wandsworth, S.W.

Vulcanite Ltd. Stand 104, Row E*Roofing and Dampcourse Materials, etc.*

This stand is constructed of wood, and roofed with Vulcanite to show the several surfaces with which that material can be finished. To illustrate the application of Vulcanite to roof tanks, reservoirs, etc., there is on exhibition a wooden tank, containing water, and lined throughout with Vulcanite. Among their other specialities this firm are showing "Rexilite" pure bitumen sheetings for roofing and dampcourse; "Leatherite" felts; "Bituna" pure bitumen dampcourse; Vulcanite sheet asphalt for roofing, sarking, and dampcourse; and Vulcanite bitumen and waterproof sheetings for sarking alone. The address of this firm is 118, Cannon Street, London, E.C., and there are branches also in Belfast and Manchester.



FLOORS IN COURSE OF CONSTRUCTION (AT KNIGHTSBRIDGE) ON
ARMOURED TUBULAR SYSTEM.



BLACKROCK COLLEGE, CO. DUBLIN. ROOFED WITH PATENT VULCANITE.

**C. A. Peters, Ltd. Stand 64,
Row D.***Wood Preservatives and a Flueless Stove.*

Messrs. C. A. Peters, of Derby, are exhibiting a variety of their specialities in an artistic wooden pavilion, which, in demonstration of the application of "Carbolineum," has been treated with that well-known wood preservative. Many interesting examples of wood are on view, showing the very effective results obtainable from the material, especially where the firm's "Antioxide" is used over the "Carbolineum." A preparation of this preservative, sold under the name of "Sotor" by Messrs. Peters, is highly efficacious in guarding against the destruction of submerged timbers by the *teredo navalis*.

The "Carbotron" portable stove, which burns a special fuel of that name, is also shown. The stove is flueless, it being claimed that the fuel burned gives off no smoke, smell, or fumes, and leaves no residue after consumption.

**J. F. Phillips and Son. Stand 94,
Row E.***Heating Specialists.*

Barker's patent hydro-radiant system of heating, which is in operation at this stand, is designed for use in very small installations, where it is not desired to have a separate boiler outside the rooms to be heated, and where the advantages of an open fire are appreciated. The generator consists of a handsome combination of an open fire, closed stove, and hot-water boiler—an ornament to any room—which can be immediately converted from one to the other. It can be used as an open fire of a particularly economical type, or as a closed slow-combustion stove, in either case being combined with a hot-water boiler. When used closed, it is made perfectly airtight by a patented system of joints; while open, it has all the attractiveness of an open fire. The radiators can be fixed either in the same room as the fire, or in other rooms, as desired. The amount of heat generated, which can be concentrated on the boiler, is absolutely under control, and the boiler can be shut off altogether by the movement of one lever, thus making it particularly suitable for small domestic installations, where some times heat is only required in the radiators in cold weather, or where a little heat only is occasionally required for airing purposes; or the radiators can be raised to a high temperature when required. The generator is extremely economical in fuel consumption, saving at least half the fuel ordinarily used in an open fire.

Barker's patent boiler feeder for low-pressure steam boilers is designed to overcome the serious defects of existing feeders, which generally leak water past the valve, or become blocked up with deposit, or in which the valves are liable to stick on their seats. The valve, which is operated by a float in connection with the boiler, is separated entirely from the heat of the boiler, and is fixed in connection with the feed tank. The seating of the valve is formed of an open sleeve dipping into a well of mercury, thereby ensuring a tight joint under all conditions, and absolutely preventing any tendency for the valve to stick on its seat, or to become furled up. It has, further, the advantage that the working of all parts can be immediately tested and examined without stopping the boiler or breaking any joints. The tank can be fixed any reasonable distance from the boiler. The London address of this firm

of heating specialists is 21, Old Queen Street, Westminster. They are special licensees for Barker's patent "Cable" system of low-pressure hot-water heating, which has been previously described in the Journal. Its leading principle is that the water circulates by suction instead of being driven; and the pipes, which are relatively small, may be bent or raised and depressed as desired—an enormous advantage as regards convenience of installation; while the high degree of efficacy, and the nicety with which the temperature can be controlled, have secured for the system an established position as a means of heating hospitals, schools, and public buildings.

**Carron Company. Stand 223,
Row K.***Grates, Mantels, Baths, etc.*

This firm's long and honorable reputation—it was founded in 1759—as producers of high-class hardware goods in which architects and builders are interested is worthily sustained and, as it were, illustrated by the extensive and interesting display that has been installed at the present exhibition. The firm is peculiarly fortunate in its combination of beauty with



GRATE BY THE CARRON COMPANY.

utility; for not only is great attention paid to convenience and comfort—as, for instance, in the ranges, stoves, and other apparatus specially devised for economy of fuel, absence of smoke, ease of manipulation, labour-saving contrivances, and so forth—but the firm happen to be in possession of many beautiful patterns and designs which originated in the best period of British craftsmanship, when Chippendale, Sheraton, Heppelwhite, and the brothers Adam raised the standard to perhaps the highest attainable pitch of excellence; and these designs have been very happily adapted to modern conditions in the Carron products, and fitting in admirably, though by no means fortuitously, with the present revival of eighteenth-century taste.

The firm are showing a number of special interiors, mantel registers, and mantel-pieces that are of particular relevancy to the improved domestic conditions that are one of the special aims of the Garden City movement, and architects and others who are particularly interested in this class of property will find at the Carron stand much that is interesting and suggestive. The armour-bright goods manufactured at the firm's Sheffield works are fully repre-

sented; and the large French range, tilting pan, steaming closets, enamelled porcelain baths, etc., are certain to prove attractive to all sorts and conditions of builders and building owners as well as to the general public. It is one of the most varied and most extensive displays in the exhibition, and may be said to compel rather than to attract attention. The firm's London address is 15, Upper Thames Street, E.C.

John P. White. Stand 155, Row G.
Garden Furniture, etc.

This exhibit consists chiefly of English oak, of which Mr. White is the holder of a large stock. Sample boards are shown which have been cut for a considerable number of years, and photographs of his stocks, and also of various jobs executed in the wood mentioned, are on exhibition. Examples of garden gate furniture in English oak, models of oak entrance gates, and a variety of hardwood doors executed in Austrian oak are also shown. The furniture is manufactured at the Pyghtle Works, Bedford, the London showrooms being at 134, New Bond Street.

**Edmond Coignet, Ltd. Stand 86,
Row E.***Reinforced Concrete Construction.*

This exhibit comprises small models of beams, piles, etc., illustrating various applications of this system of reinforced concrete construction. There are also numerous photographs of work that has been carried out upon this system. The whole exhibit bears most impressive testimony to the extent to which reinforced concrete is now employed in constructional work of enormously varied character. In this and in other respects the exhibit is exceedingly interesting. The firm's address is 20, Victoria Street, S.W.

**George M. Callender and Co., Ltd.
Stand 36, Row C.***Dampcourses, Asphaltes, etc.*

At this stand a reservoir rendered watertight with bitumen sheeting illustrates the original system of permanently waterproofing reservoirs, tanks, ponds, swimming baths, etc., by means of "Callendrite" sheeting as invented by Callender's nearly forty years ago. In the centre of the tank is a column of loose porous bricks, under the top course of which, just above water level, is inserted a small piece of "Callendrite" Dampcourse, keeping absolutely dry the bricks above. "Ledkore" Lead and Bitumen Dampcourse, which is composed of a core of sheet lead with a special bitumen covering on both sides, may here be examined. Containing neither coal-tar nor pitch, it is independent of climatic conditions. A small model shows the application of "Protex" (for keeping walls dry) to a brick surface which has afterwards been rendered with plaster. The tenacious adhesiveness of "Protex" is clearly obvious. No firing or lathing is used to key the plaster. The firm's Bituminous Solution, for preventing rust on iron and steel work, and their Seyssel and Limmer asphaltes are also sampled. The roof of the office is covered with "Veribest" Roofing, showing the method of use, and on the roofing is shown with pleasing effect a coating of "Roofrite" waterproof paint in various colours. This paint can be used upon ordinary tarred felts if desired. There is also an example of the "Permalithic" flooring, which is asbestic, and, besides being jointless, is proof against water, fire, and acid, and is silent and sanitary. The firm's address is 25, Victoria Street, Westminster.

R. Waygood and Co., Ltd.
Stand 123, Row F.*Lifts, etc.*

This well-known firm of lift manufacturers are showing the following exhibits:—A Waygood passenger lift, full size, for taking passengers from the ground floor to the gallery; hand power passenger lift, full size; model electric passenger lift, operated by pushes; two model hand-power service lifts, one operated by an endless rope and controlled by a brake rope, and the other operated by a handle and controlled by a foot brake. Not only are these lifts luxuriously equipped, but supplementary safeguards, such as additional wire ropes, are fitted so as to ensure complete safety. This firm are also exhibiting their vacuum cleaner for removing dust from curtains, upholstery, etc. Messrs. Waygood and Co.'s address is Falmouth Road, London, S.E.

Homan and Rodgers. Stand 127, Row F.*Fireproof Floors and Partitions, etc.*

Conspicuous at this stand is the firm's well-known hollow brick fire-resisting floor, which has been used in some 1,200 buildings, mostly in London. These floors are constructed with hollow triangular bricks about 18 ins. long, placed between steel joists of a specially light section, and are made with a projecting underlip that entirely protects the underside of the joist. Concrete composed of broken brick or ballast is then filled in to the required thickness. No centering is required, and the construction is extremely rapid. The key for plaster is good, no hacking being necessary. The floor is light and sound-resisting, the different densities of the materials and the air spaces greatly breaking up the sound vibrations. These floors are very suitable for flats, public buildings, hospitals, schools, or any building where it is essential to have a floor which, while fire and sound resisting, is at the same time light and inexpensive.

This firm's patent reinforced concrete floor, which is also exhibited, is constructed of steel rods passing through the main girders and forming a continuous tie. The firm's patent reinforced concrete partitions, also shown, comprise slabs about 2 ft. 6 ins. by 1 ft. 3 ins., made of coke-breeze, sand, and Portland cement, with horizontal steel rods cast in the concrete top and bottom of the slab. A hole for $\frac{1}{4}$ -in. rod is left vertical in the centre of the slab to allow for the rod being inserted at the time of fixing. This rod projects about half-way through the groove of the slab above (the slabs being laid to break joint), and is then grouted in with cement, the result being a very strong and compact partition, capable of resisting heavy blows with a sledge-hammer.

Among the exhibits on this stand is a block of concrete of granite chippings and cement reinforced with special twisted bars and rods which has been tested by means of the oxy-acetylene blowpipe. This block of concrete was made from the same material that was used in the construction of a reinforced concrete strong room to a well-known bank in the City. The block was submitted to the severest attack of the blow-pipe. An oxy-acetylene apparatus, with a "cutting blowpipe," was used, and after twelve hours' work by a skilled operator with the help of a trained mechanic the block was pierced. A chisel and lead hammer were used at intervals to assist in the work. The average size of the hole which was cut right through the block was approximately 6 $\frac{3}{8}$ ins. by

5 $\frac{3}{8}$ ins. The test conclusively shows that the piercing of a hole sufficiently large for a man to get through would take so long, and requires such a large quantity of gas, that a strong room constructed of this material may be considered burglar-proof. The firm's address is 17, Gracechurch Street, E.C.

Roberts, Adlard and Co. Stand 51 Row D.*Roof and Floor Tilings, etc.*

Messrs. Roberts, Adlard and Co., of 25-26, Bermondsey Wall, London, S.E., are exhibiting a variety of their roofing and flooring specialities, and a model roof, which is so formed as to permit the practical demonstration of a number of their architectural roofing materials. Specimen "swept" valleys are on view, and examples of "Racphas" stone slating and paving are also shown. Many kinds of slates are exhibited, the rustic variety being in red, fawn, green, and other colours; and the "Eureka," the "Viking," and the "Permanent," which are the distinctive names of a further series of green slates, are all artistic roof coverings that have been largely employed with satisfactory results. The "Penrhyn" variegated slate, from Lord Penrhyn's quarries, is also on show, together with Bangor and Portmadoc slates from Velinheli, Oakeley, and other well-known quarries. A plastic hand-made roof tiling is another variety shown, being very hard burnt, and obtainable either in mixed shades or in one colour. Among the reproductions of old tilings is the "Antique," which is shown on one part of the roof, and the old-style "Sussex Valley," both of which are hand-made, plastic, and hard burnt. Genuine old tiles can be seen on the stands inside, and colour-glazed tiles, as used on the Savoy Hotel and elsewhere, are also exhibited. Oak shingling, wall and floor tiling, slate masonry, slate for electrical purposes, and constructional ironwork are chief among the remaining exhibits.

Benham and Sons, Ltd. Stand 208, Row J.*Heating and Cooking Apparatus.*

This firm exhibit the "Wigmore" independent system of hot-water supply; the "Wigmore" kitchener, which is specially constructed with heavy hot plate metal

and with smoke-consuming fire, and also can be fitted with hot closet over plate rack; large central coal hot plate with descending flue, as used in large kitchens of hotels, etc.; "Perfect" system of heating buildings and offices, consisting of a circulator by which the circulating pipes can be run irrespective of levels, and a uniform temperature maintained in all rooms and on all radiators; a nest of wet steam ovens for steaming potatoes, fish, etc.; central pattern hot closet and serving table, with steam top and steam lower shelf for serving and carving; and the latest pattern of gas and coke grill or Salamander. The head office is at 66, Wigmore Street, W.

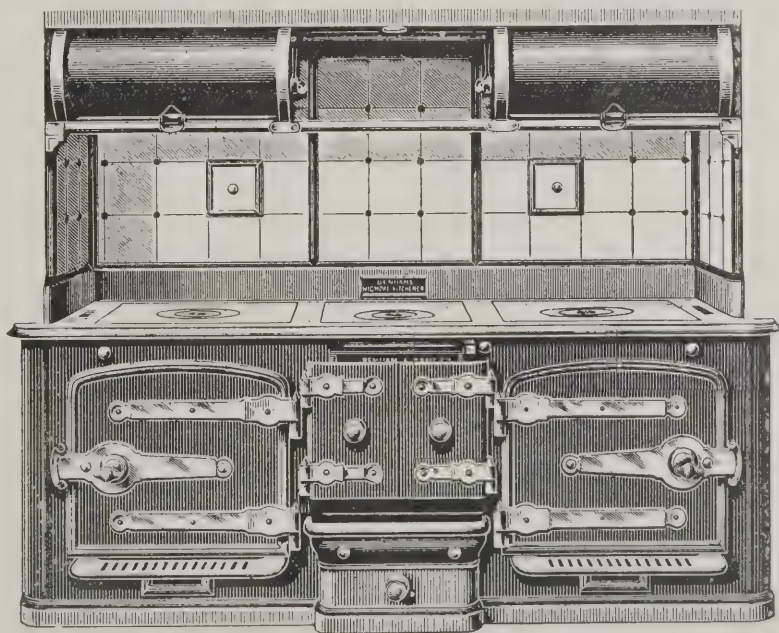
Emdeca, Ltd. Stand 110, Row F.
Metal Decorations.

A great variety of patterns is shown, suitable for bathrooms, lavatories, kitchens, etc.—in fact, for all places where a sanitary and permanent decoration is required.

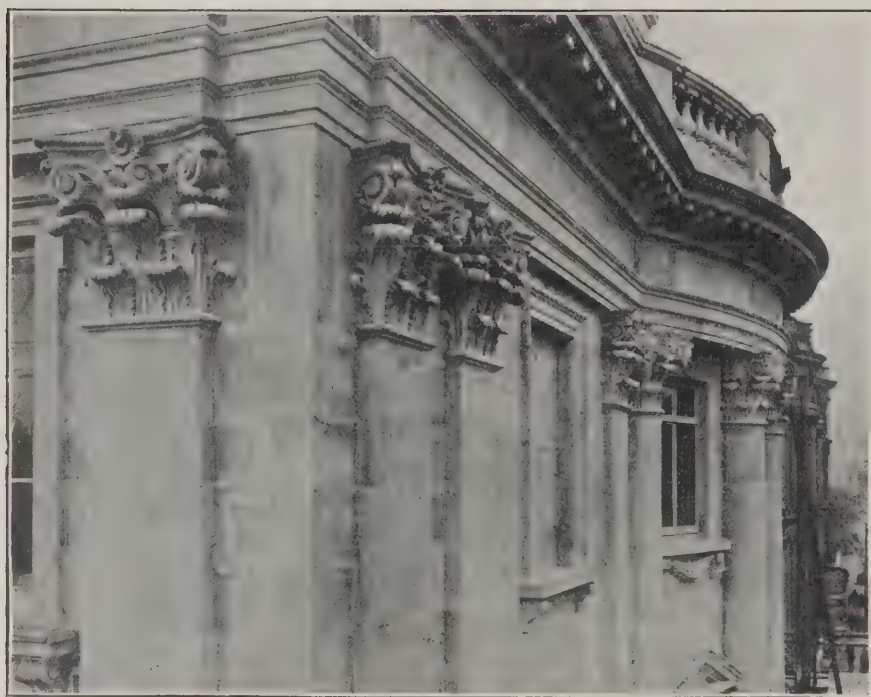
Besides the Emdeca decorations, this firm show their stamped metal work, consisting of steel ceilings specially recommended for fixing over old and cracked plaster ceilings, and a variety of examples of stampings such as a model of a church tower as supplied for the Reformed Church, Pretoria, and ornamental metal work as supplied for the Palace of Peace, The Hague. The firm's address is 97, Queen Victoria Street, E.C.

Walter Carson and Sons. Stand 222, Row K.*Paints, Varnishes, etc.*

At this stand a special feature is made of "Coverine" flat white undercoating. On a panelled screen in the centre of the stand are displayed decorative flat japans of various colours. A flat white enamel, suitable for the interiors of hotels, etc., is also shown; and glazed sash bars showing "Plastine" against genuine linseed oil putty after 12 months' exposure are on view, as well as a panel showing the results obtained by employing "Vitrolite," "Coverine," and "Japolite" on bare wood. Specimens of the firm's decorators' varnishes and dry colours are also shown. The firm's works are at Battersea, S.W.



THE "WIGMORE" KITCHENER, BY BENHAM AND SONS, LIMITED.



CARVING TO MANSION IN HAMILTON PLACE, W. BY JOHN DAYMOND AND SON
W. H. ROMANE-WALKER, A.R.I.B.A., ARCHITECT.

Messrs. John Daymond and Son.
Stand 215, Row K.

Architectural Carving, etc.

This firm exhibit models for stone carving executed on buildings; polished specimens of coloured marbles and varieties of onyx for decorative and constructional purposes, pilasters, dados, etc.; a carved Adam vase in Portland stone; modelling in stucco for interior and exterior decoration; hardwood joinery, ecclesiastical and domestic; font cover and royal arms; fibrous plaster enrichments for ceilings and cornices; sketch and scale models of details and portions of buildings, and church fittings; models and patterns for casting in bronze and other metals; garden figures, etc.; a shepherd and shepherdess in cast lead. Messrs. Daymond, whose address is 1, 3, 5, and 7, Edward Street, Vauxhall Bridge Road, S.W., are London agents of the New Hopton-Wood Stone and Marble Co., Ltd.

Horrell and Bowman. **Stand 25a,**
Gallery.

Cowls and Boiler Grates.

Horrell's patent chimney cowl has been recently described and illustrated in the Journal; and further inspection of it at Olympia confirms our first impression of the merits of the invention. It may be here recalled that the problem which the inventor set himself was the production of a revolving cowl which, by getting rid of the ordinary central spindle, and by a radical modification of the hood, should leave a clear way for the smoke to pass straight up and for the sweep's brush to emerge. The revolving mechanism is outside the flue pipe, round which the cowl revolves circumferentially on cleverly designed and adjusted wheels, all the working parts being carefully protected from the weather, as well as made of metals that are not subject to corrosion. The cowl is extremely easy to fix, is of by no means unsightly appearance, and revolves freely at the slightest touch. An important feature is a special fixing collar which ensures a smoketight joint between the neck of the chimney-pot and the outside of

the flue-pipe. At the same stand is shown the "Adaptable" Boiler Grate, in which an inconspicuous boiler, fitted low down at the back of an ordinary sitting-room grate, utilises heat that would otherwise be wasted, and adapts it to any required service, such as heating the ends of a large room that are remote from the fire, or carrying heat to a greenhouse or garage, etc., so that a 16-in. fire will heat 100 ft. of 4-in. pipe, or 120 square feet of radiator surface, or a 30-gallon hot cistern; and the fire can be supplied in any width up to 24 ins. The firm's address is—Moseley Road, and 33, Newhall Street, Birmingham.

British Ceresit Waterproofing Co.,
Ltd. Bay 23, Gallery.

Ceresit Waterproofing Material.

Ceresit is a cream-white paste of about the consistency of butter. When mixed with cement mortar, the latter is rendered impervious to water. It is dissolved in the water with which the cement mortar or concrete is to be mixed, the proportions being one part of Ceresit to twelve to twenty parts of water. Mortar treated with Ceresit will not peel off; and the preparation is also applicable to any structural material, such as brick or stone. It is claimed that Ceresit not merely renders ordinary structures damp-proof, but prevents the penetration of water under heavy pressure, as encountered in dam, reservoir, and bridge work. It is sufficiently elastic to contract and expand under varying extremes of temperature. It has been used on many important Government and other buildings. The firm's address is—Caxton House, Westminster.

The Ivoril Plaster Co. **Stand 72,**
Row D.

Ivoril and Stonament Plastering.

Ivoril patent plaster gives a hard and smooth surface which, by its resemblance to polished ivory, suggested the trade name of the material. As it can therefore be washed or otherwise cleaned as effectually as glazed brick or tile, and is proof against fire, germs, and vermin, it is eminently

suitable for the walls of hospitals, schools, and public buildings, as well as for domestic work. Stonament is a new material for use in the treatment of external walls, which it renovates and preserves. The vendors state that it is very suitable as a finish for reinforced concrete buildings. The firm's address is 61, Albert Road, Middlesbrough; and the patentees of Stonament are Masters and Binning, Middlesbrough.

The Wilson Rolling Shutter Co.
Stand 220, Row K.

Fire-resisting Doors and Shutters.

Wilson's rolling steel doors and shutters can be adapted to varying types of openings, to suit all circumstances. The improved fire-resisting doors and shutters are fitted with patented devices to meet the requirements of fire-insurance companies, the London County Council, and other authorities, and examples are exhibited complete and in detail. The doors and shutters are also made in bronze and wood, and may be fitted with ingenious devices for automatic release, self-coiling, etc. The firm's address is St. John's House, 124-7, Minories, E.

Frank Staines and Co., Ltd.
Stand 84, Row E.

Kitchen Fittings.

The patent grease-proof sinks and "Easy" patent portable plate-racks, trays and cup-racks, for drying and stacking crockery and glass, were awarded a silver medal at the Food and Cookery Exhibition, London, last year, and have been adopted in very many of the leading hotels at home and abroad. The sinks, of which the stands are made of seasoned wood, are in three divisions—(1) The rinsing pocket, filled with hot water, which overflows into (2) the second division, where the washing is done; and (3) a division holding a removable galvanised iron receptacle for solid matter. The plumbing is reduced to a minimum, only one outlet being required. The sinks are of several distinct types for various services, and are all fitted with special devices to prevent splashing and in other ways secure complete cleanliness and convenience. The firm's address is 38, Buckingham Palace Road, S.W.

Richard Crittall and Co. **Stand 37,**
Row C.

A New Departure in Heating.

The "Panel" system of heating by low-pressure hot water is demonstrated at this stand. In this system, radiators and visible pipes are dispensed with, and rooms are warmed by radiant heat proceeding from wall, floor, or ceiling, by means of coils of jointless tubes embedded in a layer of special composition, which is not affected by the heat of the pipes, and of which the ratio of expansion is extremely low. The material sets to a hard surface, which can be painted, and on which mouldings can be mounted. The heating panels can be coupled up to any warming system, and each section may be supplied with valves to control the temperature. The panels can be arranged for the accommodation of fresh-air inlets at the back, so that warming and ventilation are accomplished simultaneously. The firm are also showing the Honeymen ventilator, which creates an exhaust current in a large tube by means of a much smaller tube—a tube only 3 ins. in diameter creating a strong exhaust action in a tube 16 ins. square. The apparatus is thus so small that its installation does not obtrusively interfere with the architecture of a building.

Thos. Parsons and Sons.
Stand 135, Row G.
Paints, Japans, and Varnishes.

Messrs. Thos. Parsons and Sons have departed from the usual lines of stand designing, and have taken as their model the fore-part of a modern battleship, which as been followed as closely as the necessarily reduced scale would allow. The main deck is represented by the floor of the stand; in the centre is the barbette, with its pair of guns pointing towards the bows. Behind, to form the back of the stand, are conning-tower, bridge, and chart-house, rising above the upper deck. At the back, under the upper deck, a good-sized show-room has been arranged, as the firm rightly considering that they could not exhibit varnished panels, etc., on the stand itself without spoiling the general effect.

The stand is enamelled white—"Endelline" being employed—it being obvious that the slate-grey used in the Navy would be a useless and uninteresting colour to decorators, justification for this departure being the fact that, as most people are aware, warships are frequently painted white on gala occasions.

In the show-room are exhibited panels in which coloured enamels—"Endelline," "Endellflat," and "Lacreite"—are displayed. Some are specially designed to show the application of these enamels to plaster walls. Some good wooden panels have been selected for the exhibition of varnishes, and on two or three are shown flat varnishes, for which they report the demand seems to be growing.

A feature is being made of the firm's lead-free undercoating, "Opako," and in view of the attention which is now being paid by a special commission to the question of lead-poisoning among painters, this exhibit should be of widespread topical interest. It is demonstrated how the "body" of this material compares with that of white lead; and as "Opako" is used for the undercoating of the stand, it is perfectly obvious that enamel "stands out" well when this undercoating has been employed. It will thus be seen that, attractive as these exhibits are to the eye, the interest in them goes considerably deeper. The firm's London address is 8, Endell Street, Long Acre, W.C.

A. Gay and Co., Ltd. **Stand 147,**
Row G.
Paints, Enamels, Distempers, etc.

This stand takes the very interesting form of a model paint factory, at which men and girls are at work. On view are panels, etc., illustrating the application of their specialities, such as the Tegoline and Langthorne enamels, in glossy, egg-shell, and flat finishes; the Impenetrable, Etruscan, and Aluminium paints, Presto white distemper, Impenetrable water paint, Graphite paint, Impenetrable damp-proof solution, an anti-rust composition, Presto paint and varnish remover, priming and undercoat materials, etc. The firm's address is—Langthorne Works, Stratford Market, E.

Clark and Co. **Stand 61, Row D.**
Xelite and Xelstone.

Xelite plaster is a substitute for Keene's or Parian cement, giving, it is claimed, a result equal to Keene's at about the cost of lime, and being a cement of the same nature as Keene's and not a retarded plaster, it is slower setting, thus giving ample time for working in all temperatures, and enabling larger gaugings to be

made. One material only is required for both rendering and finishing. It is mixed with clean washed sharp sand for rendering and used neat for finishing. A proportion of lime plaster may be added to both the render and finish without prejudicing the ultimate result.

"Xelstone" is a new decorative treatment of "Xelite," whereby the result gives all the appearance of stone. It is applied on brickwork, lathwork, or any kind of plaster or breeze partition, and is lined to resemble stone. It has been extensively adopted for both internal and external work. The proprietors are Clark and Co., 32a, Westminster Palace Gardens, Artillery Row, Westminster.

The Well Fire and Foundry Co., Ltd. **Stand 224, Row K.**
Fireplaces, etc.

Fireplaces and their accessories are to be seen in attractive variety at this stand. The Well Fire and Foundry Co., whose address is 21, Berners Street, London, W., are exhibiting their well-known Bowes'



THE WELL FIRE: A NEW DESIGN.

patent fireplaces, and a special feature of the stand is a display of "Welft" tiles, which are now produced in London. The fireplace which we illustrate—an example selected at random—is characteristic of the excellent and tastefully designed work that the firm exhibit.

Fireproof Doors, Ltd. **Stand 175,**
Row H.
Fireproof Doors and Shutters.

Various types of stock doors, made in London, are shown at this stand, as well as specimens of the firm's "Dreadnought" Cabinet. The "Dreadnought" doors are constructed with double-channel steel frames and pressed steel plates filled with a special fire-resisting material, so that when the door is subjected to fire, expansion is taken up in the ribs and panels. Photographs of the doors installed in the extension at the National Gallery, as well as of doors or shutters recently fixed in connection with the reconstruction of the east wing, which will be duplicated in the west wing, are also exhibited. The firm's address is 43, King William Street, E.C.

Burn Brothers. **Stands 38 and 39,**
Row B (Gallery).

Burn Brothers are showing a large assortment of their cast-iron "gas-tight" house drain fittings, also London County Council soil and waste pipe fittings. They also show a large number of appliances for testing, cleaning, and clearing drains, such as their patent "Eclipse" smoke machine, "Times" expanding plugs, bag stoppers, "Lockfast" drain rods, Vacuum pump, etc. They have some interesting exhibits of their patent apparatus for use in biological treatment of sewage, among which are alternating and timing syphons shown in action, also a working model of their patent rotary sewage sprinkler, which is provided with self-clearing orifices. Several forms of their patent "Certus" sewer flushing syphons are also shown, as well as valves, penstocks, etc. The firm's address is Rotunda Works, 3, Blackfriars Road, S.E.

Wm. Oliver and Sons, Ltd.
Stands 4 and 5, Row A

Hardwoods and Home-grown Timber.

This firm are showing, on two large stands, a fine selection of best quality seasoned hardwoods, fit for immediate use. The firm are on this occasion making a speciality of English grown timber, to which one of their stands is entirely devoted. Their offices are at 120, Bunhill Row, E.C.

Lewis Berger and Sons, Ltd.
Stand 55, Row D.

Paints, Colours, and Varnishes.

This exhibit shows the fine decorative effects obtained in "Enamelac" white japan for woodwork, "Matone" (an enamel in paste form, producing, without stippling, a perfectly washable flat finish), for walls, and "Artcraft Stains" for natural wood finish. The interior of the exhibit shows five wall spaces finished in different shades of Matone, with a dado of ordinary whitewood panelling, finished in four shades of Artcraft stain. The structure of the stand itself is finished in Enamelac white japan. Practical demonstrations in the use of Berger's paints, colours, and varnishes are given daily on the stand.

The Ravenhead Sanitary Pipe and Brick Co., Ltd. **Stand 49, Row D.**

Rustic Facing Bricks, Sanitary Ware, etc.

This stand has not been set up as an architectural design, but rather to demonstrate the effect of "Rustic" facing bricks when built up; and a variety of special bricks have been introduced to show that almost any shape can be produced in this class of work. There is a low wall of bricks 9 in. long by 2 in. thick, showing a half-round coping in "Rustic" bricks; with bevels and bullnose worked in at the top end. There is also a wall of bricks 9 in. long by 2½ in. thick, showing double brick air grids, plinths, and weathered arch, with springer blocks, and a weathered cill with corner blocks. Forming part of this wall is a semi-arch in the design of a bold beaded brick, rustic faced, the bead being worked in one jamb of the doorway from the floor. A wall of bricks 9 in. long by 2½ in. thick is also constructed with a small bay, showing plinths, octagons, and plain cill, and some short lengths of mullions; air grids are also shown in this wall, and a diamond panel surrounded by a moulding.

Other varieties of walls are shown; and in the string course running on the upper side of some of the walls it will be noticed

that the serrated projection of the face is built with the drag or the cut set down, so that no wet or dirt can be held. The specials are cut to get the same effect as far as possible.

James Brown (London), Ltd. Stand 196a, Row J. *Brick Merchants.*

This firm's stand comprises a small brick erection showing their 2 in. facing bricks, of dark, black, and mottled colours; the interesting antique window mouldings, moulded strings, quoins, etc., being all of the same texture as the facing bricks. Specimens of the firm's hand-made rough sand-faced roofing tiles, holed and nibbed, are also included. The interior of the stand is rendered additionally interesting by the presence of a brick fireplace and overmantel, while the floor is covered entirely with hand-made quarry tiles. The firm's address is Essex Wharf, Durward Street, Whitechapel, E.

John Tann. Stand 107, Row E.

Safes, Doors, Locks, etc.

This firm, which was established in 1795, exhibits the "Anchor Reliance," Household, Commercial and Security safes, and several others, which are specially constructed with drill-proof doors for securing cash, jewellery, and other valuables. The fire and burglar proof safes are bent solid at all twelve corners from one steel plate. Several types of strong-room and other doors, including party-wall and warehouse doors, meeting the requirements of the London County Council and the Fire Offices Committee, are also exhibited, as well as cash and deed boxes, copying presses, and improved lever locks. The London office is at 11, Newgate Street, E.C.

J. A. King and Co., Stand 111, Row F.

"Mack" Slabs, "Ferro-Glas."

The well-known "Mack" plaster slabs for partitions, ceilings, etc., are shown at this stand. But the particular novelty in the firm's exhibit is "Ferro-Glas." Briefly, this may be described as consisting of translucent glass blocks in all possible sizes and thicknesses assembled and reinforced with mild steel rods and cement mortar, giving in the case of horizontal construction a crystal glass ceiling with practically invisible joints, and at the same time a weight-carrying construction; thus combining the features of floor and ceiling together with artistic effect. The material is claimed to be fire-resisting and to possess great bearing strength, involving a minimum expense for maintenance, and giving the maximum light. No shadow is cast, as with iron frame construction; no painting is necessary; and the construction can be rapidly erected and easily cleaned. "Ferro-Glas" is altogether a novel material and offers great scope in application to all kinds of lights for roofs, domes, floors, pavements, etc.

Technical Journals Ltd. Stand 60, Row D.

Architectural Publications.

At our own stand may be examined and purchased copies of the various publications issued by this firm. A comprehensive list of these can be obtained on application. They include "The Architectural Review," edited by Mervyn E. Macartney, B.A., F.S.A., F.R.I.B.A., is monthly, a publication of the highest artistic character; "The Architects' and Builders' Journal," which it were superfluous to describe; and "Specification for Architects,

Surveyors, and Engineers," which, published annually, price 3s. 6d. net, and comprising more than 500 pages, provides all the information that the profession requires when preparing drawings, writing specifications, or compiling bills of quantities. A few other important publications may be usefully noticed. Prominent among these are, "A Short Chronological History of British Architecture," price 10s. net, in which Mediæval Architecture is dealt with by Edward S. Prior, M.A., F.S.A., F.R.I.B.A.; Early Renaissance by J. Alfred Gotch, F.S.A., F.R.I.B.A.; and Later Renaissance by Mervyn E. Macartney B.A., F.S.A., F.R.I.B.A. The "Practical Exemplar of Architecture," embodying in a permanent and beautiful form the work of the masters in architecture, is a publication of unique value to the profession, showing, as it does, the best examples of modern as well as of old work. "Recent English Domestic Architecture" is another work of which it would be difficult to exaggerate the interest and importance. The stand is adorned with framed portraits of "Architects of To-Day," as well as specimens of the fine series of pictures of vanishing London by Frank Emanuel.

COMING EVENTS.

VISITS TO THE BUILDING TRADES EXHIBITION.

Wednesday, April 26th.
Institute of Heating and Ventilating Engineers.

Thursday, April 27th.
London Master Builders' Association.
Institute of Builders.
Pressed Brick Makers' Association.
Stock Brick Makers' Association.

Friday, April 28.
Royal Sanitary Institute.

Saturday, April 29.
Institute of Municipal Engineers.
Institute of Municipal and County Engineers.
Institute of Swedish Clayworkers.

Monday, May 1.
Concrete Institute.

Tuesday, May 2.
Institute of Clayworkers.

Wednesday, May 3.
Society of Architects.

Thursday, April 27.
ARCHITECTURAL ASSOCIATION, 18, Tufton Street, Westminster.—Combined meeting of the Camera, Sketch, and Debate Club, with the Surveyors' Institution. 7.30 p.m.

Friday, April 28.
INSTITUTION OF CIVIL ENGINEERS, Great George Street, Westminster.—T. Frame Thomson, M.Inst.C.E., on "The Commercial and Technical Relations of Design and Work." 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS, Storey's Gate, S.W.—General meeting. J. Emerson Dowson on "Gas Producers." E. A. Alcutt, M.Sc., on "The Effect of Varying Proportions of Air and Steam on a Gas-Producer." 8 p.m.

Monday, May 1.
SOCIETY OF ENGINEERS.—H. C. H. Shenton on "The Protection of Water Supplies," at the Institution of Electrical Engineers, Victoria Embankment, W.C. 7.30 p.m.

SURVEYORS' INSTITUTION, 12, Great George Street, Westminster.—Junior Meeting. Discussion on the Land Clauses of the Finance (1909-10) Act, 1910. 7 p.m.

Thursday, May 4.
ARCHITECTURAL ASSOCIATION.—Annual dinner, Trocadero Restaurant, Piccadilly.

Saturday, May 20.
INSTITUTION OF MUNICIPAL ENGINEERS, 39, Victoria Street, S.W.—Visit to Messrs. Chittenden and Simmons's tar-paving works and quarries, Borough Green, Kent.

Monday, May 22.
ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—R. Anning Bell on "Coloured Relief as Decoration." 8 p.m.

Saturday, June 10.
INSTITUTION OF MUNICIPAL ENGINEERS, 39, Victoria Street, S.W.—Visit to Messrs. Aveling and Porter's Works, Rochester.

Monday, June 26.
ROYAL INSTITUTE OF BRITISH ARCHITECTS, 9, Conduit Street, W.—Presentation of the Royal Gold Medal. Laurence Weaver, F.S.A., on "The Interleaved Heirloom Copy of the 'Parentalia,' and some Notes on the Wrens." 8 p.m.

FEDERATION NEWS.

Midland Centre.

A quarterly meeting of the Executive Council of the Midland Centre was held in Birmingham on April 6th, when the president (Councillor J. Hardy Walker, of Derby) took the chair, and nineteen other members attended. The recommendation of the Administrative Committee of the National Federation in regard to new basis of Federation subscription and contribution to the National Reserve Fund was approved, and the local associations were requested to agree to same.

The secretary's quarterly report stated that several difficulties with the operatives had been dealt with by the various Conciliation Boards. Two meetings of the Midland Centre Board had been held. At the first one the Nottingham carpenters were granted an increase of wages (9d. to 9½d.) as from 1st July next, and alterations were made in the walking time and notice of dismissal rules. At the second meeting an application from the Leicester carpenters for an increase from 9d. to 9½d. was deferred until September, unless settled locally in the meantime.

A letter had been sent to more than 100 builders in North Staffordshire in reference to the re-organisation of the Association there, and the secretary hoped to call a meeting shortly. The report was approved and various accounts were passed for payment. The recommendation passed at the Conference of Secretaries in reference to National Insurance was considered, and the following resolution was passed:—"That this Council protests against any further legislative burden being placed upon employers in a limited number of industries, and that the National Federation and the Employers' Parliamentary Council be requested to carefully consider the proposed Government scheme for insurance against unemployment, sickness, and invalidity, and to take action if necessary. The Council strongly urges that any system of National Insurance should be such as shall impose upon all tax-payers a fair share of the burden."

A letter which the secretary had sent to the Board of Trade in reply to a communication in reference to apprenticeship was approved. In reference to the third question asked ("Can anything more be done to improve the present system for training skilled work-people?") it was decided to request the Board of Trade to bring pressure to bear upon trades unions with a view to the removal of the restrictions which they impose in their working rules limiting the number of apprentices to be engaged in their respective trades.

A letter was read from Mr. A. G. White with reference to the Departmental Committee on dangers attendant on the use of lead in house painting, and the following resolution was passed:—"That the Departmental Committee be pressed to extend the scope of their enquiry with a view to discovering possible and satisfactory alterations to lead in the work of painting, so that through research they may be able to recommend a remedy for any dangers disclosed in the course of their enquiry."

The Quantity Surveyors' Association were thanked for their courtesy in submitting a proof of a pamphlet they are preparing embodying suggestions for dealing, in bills of quantities, with the items usually included in the Preliminary and Sundries Bill. The proof was approved, and a suggestion was made that an item should be included in the quantities for workmen's compensation insurance.

The next quarterly meeting of the Council will be held at Derby on July 6th.—FRED. W. AMPHLET, Secretary.

Sunderland and District.

At a general meeting of the Sunderland and District Building Trades Association, held in the Board Room, Sunderland, Mr. J. Morice Wright, President, in the chair, the draft schedules of prices of time and material work which had been circulated among the members was considered, and it was resolved "That the schedule of prices of time and material work, with the alterations of 3s. to 2s. 6d. per hour for mill sawyer and machinist, be accepted and adopted for the use of the Association."

The secretary reported upon the recommendation upon the proposed alteration to the dressed stone rule arrived at by the Executive Council of the N.C.F., which would come before the quarterly meeting of the Federation in due course. The report was received.

A letter from the National Federation was read asking if the Association could submit the names of gentlemen who would be willing to give evidence before the Departmental Committee upon lead poisoning. It was decided "That the Association is not in a position to offer evidence, but believes the disease is not prevalent in this district," and upon the proposal of the National Federation to join the International Federation of Building Works Contractors no resolution was passed.

The action taken by the Federation with respect to the demand of the Southwick U.D.C. for priced schedules to accompany tenders was approved. The authority refused to waive the objectionable condition, and the Federation have requested an interview to discuss the question.





CONCERT HALL
ROYAL ACADEMY
OF MUSIC
ERNEST GEORGE & YEATES
ARCHITECTS

THE ARCHITECTS' & BUILDERS' JOURNAL.

*WEDNESDAY,
MAY 3rd, 1911.*

Volume XXXIII,

No. 849.



The above view shows the hall, with its bay—an interesting piece of mediæval brickwork.

THE FIRST COURT OF QUEENS' COLLEGE, CAMBRIDGE.



(Royal Academy Exhibition.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

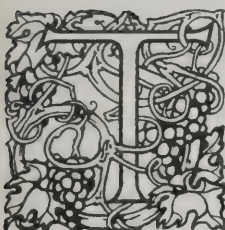
MAY 3rd, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 849.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Architecture at the Royal Academy.



THE exhibition in the Architectural Room at the Royal Academy this year shows no change in the general character of the drawings. As usual, there are a great many picturesque drawings of buildings without any plans to explain them; and the quality of sketchiness seems rather on the increase than otherwise. It used to be

considered that a perspective drawing for the Academy, even without a plan, should be a highly finished drawing, from which it would be possible at least to understand the detail of the proposed building, but now we see large drawings, some of them representing the work of eminent architects, which are mere washes of effect in which no detail can be clearly made out; a method of representing architecture which is totally inadequate and unsuitable, and which the Academy, if they cared anything about the representation of architecture, ought to set their faces against. In regard to the general character of the collection, it may be observed that public or municipal architecture is less represented than usual; that the department of church architecture seems to be strongest, though not presenting anything very remarkable; and that there are a good many charming sketches of domestic architecture, unfortunately in many instances without plans to explain the arrangement and aspect of the rooms, a matter of such importance in regard to the comfort and the workable character of a residence.

The room contains two models; we wish there were more, for models form the most satisfactory manner of illustrating architectural design on a small scale, provided they are accompanied by a plan, in the case of models of buildings. Of the two exhibited this year, one, the "Design for a Fountain for an Italian Garden," by Mr. F. Lynn-Jenkins, though architectural details enter into it, is really a sculptural design, and is classed as such in the Catalogue. It represents the kind of general scheme of design frequently found in Renaissance Italian fountains; a large circular basin at the foot, echoed by a smaller circular platform at about one-third the height of the whole design, on which the water splashes in its descent to the main basin; a general pyramidal composition, crowned by a very graceful female figure. There is nothing to criticise in the details, and the whole forms a very charming design, though not presenting anything very original in conception. Originality is still less apparent in the other model, "Castleton Park," by Messrs. Blow and Billerey, which in all essential points is simply a copy of Kedleston Hall, with its four outlying pavilions connected by quadrants with the centre block. The scheme of the outbuildings, however, is improved, and the central portico is shown with the columns standing free, and a recessed portico behind them. No plan is given, so we cannot tell whether it is proposed to repeat the interior plan of Adam's house, which Johnson and Boswell considered so inconvenient. But in the main design this is Kedleston Hall over again, and it is rather amusing to reflect that if the latter were a modern instead of an eighteenth-century build-

ing, this design would certainly be barred by the provisions in regard to architecture in the proposed Copyright Bill.

Turning to the drawings, we may look first at those exhibited by members of the Royal Academy. Mr. Belcher, from whom we are always sure of something original and interesting, whether we entirely like it or not, unfortunately has been unable to send anything this year. Sir Aston Webb, in his large illustration of the new buildings for the "Imperial College of Science and Technology" in Prince Consort Road, has set an excellent example (would that it were more followed), in showing the whole design by elevations and plans; a general plan and a larger-scale plan of a part of the rooms, showing the detailed arrangements. The architectural treatment is Classic of a very reserved and severe type of detail; the treatment of the windows, which are coupled vertically, with a segmental pediment as a crown to each couple, is very carefully worked out in its simple detail. In the centre portion the large projecting piers are built up as ashlar masonry with vertical joints, but are finished at the top with Ionic capitals, making them a kind of cross between a pilaster and a buttress. The large semicircular alcove in which the entrance is placed, and which rises the full height of the front, makes an effective central feature. The generally plain character of the detail is quite in keeping with the practical objects of the building.

Professor Blomfield, in devising his "New Gardens from House to Canal; Mellerstain, N.B.," must surely have been thinking of Bacon's essay, "Of Building," and his suggestion of the courts of approach to the mansion; "a green court plain, with a wall about it; a second court of the same, but more garnished with little turrets, or rather embellishments, upon the wall; and a third court, to make a square with the front, but not to be built, nor yet enclosed with a naked wall, but enclosed with terraces leaded aloft," etc. Not that the Bacon régime is exactly carried out, but the scheme reminds one of it. There should have been a section as well as the bird's-eye view; from the view it appears that there are steps up to a grassed court, from which a central alcove staircase leads to the higher level of the next court, which has a parterre garden in the centre, and at each angle of the first court is a built arch within which, we presume, are stairs leading to the terraced walk round the second court, but at a higher level than the garden part of the court. As observed, a section would have made it plainer, but it seems a fine scheme. The same architect exhibits a perspective view of "The Holburne Gallery, Bath," a building which has the guise of an eighteenth-century mansion, with a tetrastyle portico and external steps up to it; on each side of the house a columned exedra appears to give access to a garden in the rear. There is no plan. The composition is a pleasing one of a rather familiar eighteenth-century type; the drawing, which we should think is not by the architect, is rather hard and mechanical.

Messrs. Ernest George, A.R.A., and Yeates exhibit a drawing of the interior of the concert hall of the Royal Academy of Music (no plan), which appears to be built in defiance of the usual experience that ceilings of circular section, especially when unbroken by features in relief, are

acoustically bad, as promoting echo. This may not be the case with the present room, but we should expect it to be so, though it is a pleasant-looking interior in any other sense. The treatment of the organ-case is most unfortunate; there is on each side a curved double row of pipes of equal height, with no concealment of the tops of the pipes, which show as all cut to an equal height. This is practically impossible, if these are sounding pipes; the only way in which this appearance could be given would be by cutting out parts of the metal at the back portion of the pipes, where it cannot easily be seen; a very bad system. To design an organ-case on an apparent assumption of the equal length of a number of the pipes is wrong, because it is assuming what is scientifically impossible. Messrs. George and Yeates's other exhibits are a perspective of a plain stone house, "No. 17, Grafton Street" (no plan), with some pleasing decorative detail concentrated on the entrance doorway, and a view, plan, and section of "The Columbarium of the Crematorium, Golder's Green," which is of considerable interest, though as to the exterior view we may suggest that, in a wholesome protest against meretricious ornament, it is possible to go to the other extreme, and to be too plain. Mr. Ernest Newton, the new Associate, exhibits four drawings of charming pieces of domestic architecture, of which "House at Hambledon," the largest and most important, is a typical example of the old style of English country house, with the red brick walls crowned with an unbroken white modillion cornice, whether stone or wood is not apparent. Mr. Newton is aware of the value of this continuous cornice, which appears again in the "House at Ewhurst," also red brick, with the projecting bays treated apparently in white rough-cast with some delicate little decorative details. No plans are given with any of the drawings; Mr. Newton never has appended plans to his Academy drawings; he seems to think that a picture of the outside of the house is enough, and in that we cannot agree; we want to know how the exterior features arise out of the plan.

As we have already observed, public architecture is not very largely represented this year. Taking some of this class of exhibits in their Catalogue order, we may notice first Sir W. Emerson's "Design for the Institution of Civil Engineers" (no plan); a classic design of some individuality, and certainly better than the present commonplace building. The concentration of the decorative portion in the centre, and the manner in which it is done, in contrast with the very plain treatment of the side portions, is effective and unusual, but the suggestions for the sculptured frieze, with views of bridges and viaducts, look too pictorial for the position. The drawing is a remarkably good one, but it is really absurd to give such a building as this without a plan, showing how the interior arrangement works out, and why the front block is higher than the rest, for which the perspective view furnishes no explanation. Mr. Verity exhibits a large drawing of a "New façade for the Polytechnic and adjoining buildings, Regent Street," which one may count as public architecture. As this is merely frontage, a plan is hardly necessary here. The design is in keeping with the general character of Regent Street, and one cannot but notice the excellent proportion of all the parts; the work of a thoroughly practised hand. Another street façade design, a façade only without a plan, is Mr. Stanley Hamp's, for a front in Queen Street Place, Southwark; this may be called Free Classic, effective, but not very refined in detail, and the effect of having the centre portion with the columnar order returned upon itself, stopping short of the end pavilions instead of stopping against them, is not very good; it looks as if the centre and the sides had no connection with each other.

The "New Treasury, Post Office, Law Courts, and Street Improvements, Kingston" (Jamaica), by Messrs. Nicholson and Corlette, is a very unsatisfactory illustration of a considerable and apparently important piece of work; it is a large, rather slightly executed water-colour drawing, from which we get an impression of a white, flat-roofed architec-

ture, with the buildings all surrounded by verandahs, with square white columns; we get the general effect very well, but surely it would have been worth while to have illustrated such a scheme by something better than what is merely a large perspective sketch. Part of the title is "Kingston Street Improvement," but there is nothing to show wherein the street improvement consists. Mr. Atkinson's "Berkshire County Council Offices" (no plan) is a square and rather heavy-looking Classic building, which, however, shows generally refined detail, and is a good piece of work. Mr. W. L. Lucas's "Proposed King Edward's Bridge, and transfer of S.E.R. Station to South side of River," is an able scheme completely shown, though on a small scale, in plan and perspective. The proposed bridge opens on the south side on to a large oval place called "King's Place"; on the further side a triumphal arch opens on to the main road routes, while the railway station is cleverly wedged in at one side, its oblique position being concealed by one of the two symmetrical blocks in Classic style which line the roadway leading from the arch. This is altogether a very good frame of drawings, in which an architectural scheme is properly shown.

We have passed over some prominent drawings of public architecture, either because they were manifestly only competition designs, or because they presented nothing we could admire, or (in one or two instances) because they were so defiantly sketchy and obscure in detail that no judgment could be formed of them as architecture. Such drawings suggest the idea that someone had said at the last moment: "Let us rough out something for the Academy; anything will do just to put in an appearance"; and as long as the Academy Council are content to ignore plans and to regard the Architectural Room merely as another Water-Colour Room (which is what it mainly is), this manner of illustrating architecture will be encouraged, or at all events condoned. But architectural illustrations of this kind are of no real value.

We shall have more to say on other classes of exhibits in a future issue.

Ruskin Rehabilitated.

RUSKIN'S reputation having suffered somewhat severely during recent years from the natural revulsion which is the almost invariable sequence to hero-worship, the Slade Professor of Fine Art has become a sort of moderator between the extremists. In his lecture on Ruskin, delivered at the Royal Institution last Saturday, Professor Selwyn Image remarked "that no writer had ever lived from whose work it was easier for a fool to pick out and gibe at mistakes, contradictions, and perversions." In admitting the blemishes, it seems hardly necessary to drag in the fool. That, as the Professor claims, "Ruskin raised around the all-important human interest of art a new and rarer atmosphere of thought and feeling" will hardly be disputed; but the faults with which Ruskin's works are overloaded have had the very serious effect of rendering him an unsafe guide in art and architecture, ethics and economics. On that account, what is of value in his dogmatic pronouncements, for instance, on architecture is too often lost to the young student, who, being commonly advised that Ruskin is to be read with caution, is therefore afraid to read him at all, lest peradventure a worse thing should happen than the results of cold neglect, the student feeling naturally diffident of ability to sift out the wheat from the chaff on so eccentric a threshing floor. Ruskin's architectural pronouncements have been very curiously annotated by himself, and many of the annotations require judicious annotation. Perhaps the time has come when "The Seven Lamps of Architecture," "The Stones of Venice," and some others, might, with advantage to the architectural student, be supplied with careful commentaries by competent architects, and thus be rendered at once innocuous and serviceable. It would be a delicate task, but men who are well qualified to perform it are surely not wanting.



A SCHEME FOR A WATER GARDEN, BY PAUL WATERHOUSE, M.A., F.R.I.B.A. 3

Royal Academy Pictures.

ON the whole, the exhibition this year may be considered a good one as far as the pictures are concerned. There is no leading picture, it is true, that will be of universal interest, and though Mr. Napier Hemy is as good as ever in the comparatively small works that he exhibits, not to have one of his great sea pictures is a distinct loss. We also miss Mr. Brangwyn, who does not exhibit this year. But there is a large average of pictures of high merit.

Among figure pictures, Mr. Sargent's large lunette, "Armageddon"—a decorative painting for the Boston Public Library—is rather a bewildering, a medley of figures and horses tumbling through the air, one can hardly tell how or why. There is great power of draughtsmanship in it, but it is *outré* and unsatisfying. Among the striking figure-pictures of the year is Mr. Lavery's "The Amazon," which practically may be called an equestrian portrait, a life-size figure of a girl on a horse holding a spear; vigorously but somewhat too coarsely executed. This, and the large picture called "A Constitutional," in Gallery IV., are reminders of the late Mr. Furse's great successes in the same class of subject, but neither of them is equal to Furse.

Sir L. Alma-Tadema gives us two pictures with neither architecture nor marble seats; decorative paintings they may be called, of girls and flowers; an experiment in (for him) a new way; beautiful painting, but not so interesting as his pictures usually are. They should not have been hung close together; they would have been far more effective a little apart. M. Dagnan-Bouveret's "Ophelia" is a rather too French Ophelia, and somewhat disappointing in connection with his name. In Gallery IV. is one of the cleverest pictures of the year, Mr. Craig's "Goblin Market," a mosaic of colour from which a quantity of delightful goblin-like detail is to be made out on close examination, which the picture requires and repays. It is perhaps the best thing its author has done. In the same room is Mr. Orpen's masterly and almost Velasquez-like single figure, called "The Man in Black."

Mrs. Laura Knight, in her large and clever work "Daughters of the Sun," girls half undressed on a sunlit beach, seems to have been trying to give the effect of strong sunlight by sheer brightness and warmth of colour, surely rather forgetting that strong sunlight means strong shadow also. There is,

however, a remarkable unity about the whole, and the foreground figure is masterly in drawing and character. Mr. Charles Sims, in his "Legend," has attempted to make a pattern (for his pictures are all patterns) out of an assemblage of legendary incidents, in which Bellerophon, St. George and the Dragon, etc., are mixed after an odd early-Renaissance fashion; but even for a pattern one wants a little more coherence of subject than this. Mr. Bundy's "Charles II. presenting Barbara Palmer to the Queen" is a good specimen of the old school, now nearly extinct, of what used to be called "historical painting," recalling the days of E. M. Ward; and Mr. Collier's "Eve" is a very good nude figure, if it does not quite rise to one's ideal of Eve. Mr. Harold Knight's garden-party, called "The Sonnet," is too large for the interest of the subject. In the last room Mr. Hornel's "Springtime Rondelay" is one of the best of his peculiar *genre* of picture, which looks like faces and flowers worked into a kind of flat mosaic. One would not wish to see him imitated, but he has invented a style of his own, and made it a success, which cannot be said of every painter; a success in so far as, whether you like his works or not, you cannot pass them over.

In portraiture there are a good many un-beautiful and mechanical examples, as usual, but a great many good ones, none better than Mr. Briton Riviere's simple and unaffected portrait in Gallery I. of a beautiful girl portrayed with hardly any accessories to distract the attention from the face. There are plenty of what we call costume portraits, in which the highly finished painting of dress seems to form the principal pictorial element; some of these are admirable in their way, but the portrait which interests one simply by the expression of personal character without rich accessories is the higher achievement. Among the portraits is a fine one of the Archbishop of Canterbury, by Mr. Sargent; a figure by Mr. Henry, "The Black Scarf," which may count as a portrait; a charming child portrait by Mr. Da Costa, and another by Mr. Mouat Loudan.

As the French truly say, we have no school of landscape in England; everyone does that which is right in his own eyes; and the best landscapes are not those which the English public care for. They like a landscape which is simply a representation of a scene, such as those of Mr. Leader and Mr.

Parsons; the latter, as a newly elected R.A., contributes a large, and, in its way, a fine landscape, but it is merely a representation. The essence of landscape-painting consists in giving the dominant impression of a scene on the mind of the painter. Sir Alfred East does this finely in "A Lancashire Valley," though in this and others he has sacrificed something of local colour in the effort after unity of impression; but so did Constable, and the French painters who followed Constable. Mr. Lamorna Birch, rather a new landscape-painter at the Academy, has produced a grand landscape in his "Cornwall." All Mr. Adrian Stokes's Alpine landscapes are fine; broad and powerful transcriptions of nature. Mr. H. W. Davis is a link between the two schools of realism and idealism in landscape; and certainly his realism is beautiful of its kind, though not so intellectual in its appeal. Mr. Bertram Priestman's "Outskirts of a Northern Town" is a painting of some power, but a little ragged in composition, which is not usually a fault of his. What can be done by sheer force of composition, without a touch of realism, is well shown in Mr. Oliver Hall's boldly handled, though small, work, "Shap Fells," a picture, however, which would certainly be caviare to the average Academy-goer. Among the sea-paintings, Mr. David Murray may be congratulated on a really good sea in his picture in the large room; better than his landscapes, which suffer in general from the want of that important quality, unity of composition.

Among things which interested us, and which cannot be classed under the foregoing categories, are Mr. Lavery's exceedingly clever night effect (a southern night, be it remembered) in his picture of "Night, Tangier,"; Mr. Albert Goodwin's painting of the Taj Mahal, from an unusual point of view; and Mr. Clausen's charming little view, "From my Window in the Small Hours," where the blocks of houses are mostly dark silhouettes, while between two of them a bit of street lighted by a concealed street lamp shines out. It shows what a real artist can make of a simple everyday subject.

The sculpture we may say something of on another occasion; sculpture is an art much nearer to architecture than painting, and should be regarded from a different point of view.

Safety of the Bank of England.

A REMARKABLE subsidence has occurred in the foundations of the Bank of England at the Princes Street corner, and work is now being carried out with a view to the safety of the building. Attention appears to have been first drawn to the matter by an incident that occurred early in the year. During business hours the staff of clerks engaged behind the counters in the private drawing office, which is situate at the Princes Street corner of the Bank, and communicates with the bill office, were suddenly startled by the sounds of a loud report, coming, apparently, from the roof of the building, and for some time there was considerable alarm. Steps were at once taken to ascertain the cause of the mysterious noise, and a searching examination was made of the roof by experts, but no satisfactory explanation was forthcoming at the time. The authorities, therefore, decided to inspect the foundations of the bill office, with the result that the discovery was made that an undoubted subsidence had taken place. The foundations were found to have sunk away from the main structure to such an extent that a rod could be easily swept through the intervening space. The work now in hand involves the task of under-pinning the Princes Street corner of the Bank. This necessitates the cutting away of the original wooden piles upon which the Bank—which covers an area of between four and five acres—has stood for nearly 200 years, and the putting in of a raft of concrete six feet in depth beneath the outer walls. In addition to the work at the Princes Street corner, an enlarged stock office is in course of construction at the Bartholomew Lane end of the Bank, and three floors have been added to the library.

A Remarkable Building.

NEW YORK will, within a year, have a most remarkable building, costing £400,000, and designed exclusively as a house for the display of automobiles, motor-boats, aeroplanes, and the allied industries. There is a starting and landing track on the roof for flying machines, and a lake 60ft. by 125ft., also on the roof, for motor-boats. There is, too, an enormous goods and passenger elevator, 25ft. by 25ft., designed for carrying an aeroplane, a large motor-boat, or 300 persons on each trip. In the basement there will be a famous "rathskeller," seating 6,000 persons, to whom a full orchestra will discourse. The main floor contains shops, and the seven floors above are intended for showrooms. One of the structural novelties will be a movable floor the same size as the centre court of the building, which may be raised or lowered, thus permitting any large exhibition to have its main floor on the ninth storey, with the tenth and eleventh floors serving the purpose of balconies. The site proposed is Madison Gardens, and will cover an area about equal to that of the Agricultural Hall, Islington. Several brewing firms are finding the money, and, with one or two slight alterations, it is expected that the plans will pass New York's building inspector.

Aggressive Cleanliness.

A SOCIALIST Member of Parliament is reported to have said, one day last week, "Of all the horrible places, I think workhouses are the most. They are so infernally clean; there is not a bit of decent dirt about them." To take advantage of such an opportunity for repartee would be mean, even for a politician. It may be more to the purpose to enquire whether there is any practical interest in the seemingly reactionary utterance. Of course, workhouses cannot really be too clean. The implied decency of dirt seems utterly inexplicable, even when dirt is regarded as "merely matter out of place." Probably the gist of the objection is that their cleanness is too aggressively emphatic, and this is a point for the architect and the sanitarian to consider; for if there is any truth in the saying that "ugly buildings swear at you," it may be equally permissible to assert that ultra-hygienic interiors glare at you. Workhouses and similar institutions should certainly be immaculately clean, but they should not, as it were, brag about it, as is "the fault of the Dutch." Nothing need be said against the plentiful use of glazed bricks or tiles, nor against keeping them scrupulously clean; but they need not afflict the vision with their dazzling whiteness, nor with any superfluity of brilliancy; for the "crockeryware corridor" is not absolutely necessary to sanitary salvation, and if it is in danger of conveying an impression of rendering a building "infernally clean," and therefore a "horrible place," the substitution of more bland, though equally efficacious, surfaces might be a wise concession to the super-sensitive.

St. Paul's Bridge.

MR. LEONARD STOKES, P.R.I.B.A., in a letter to the "Times," explains why the Institute, although they had presented a petition against the Corporation's Bill for the construction of the St. Paul's Bridge, had not instructed counsel to appear on their behalf before the House of Commons Committee. Mr. Stokes says: "By letters, by reasoned arguments, and by deputations, they have done their utmost to prevent the Corporation from making an irretrievable blunder; finally, they have petitioned Parliament to refuse the Corporation the power they are seeking to inflict their blunder in a permanent form on the heart of London. With this final step they consider that their duty ceases. The matter is now in the hands of Parliament and the public, and the Royal Institute is not in a position to enter upon a prolonged and costly Parliamentary battle against all the resources of the wealthy Corporation of London."

ALBERTI AND BRAMANTE.

BY PROFESSOR BERESFORD PITE, F.R.I.B.A.

In the paper on "Alberti and Bramante: Architecture a Profession or an Art in the Cinquecento?" which he read before last week's meeting of the Architectural Association, a summary of which is here published, Professor Pite gave an account of the lives and an estimate of the works of two great Italian architects, respectively aristocratic and plebeian, the one representing chiefly the influences of literature, the other the influences of successful practice; and both the creators of buildings displaying graceful architecture and grand design.

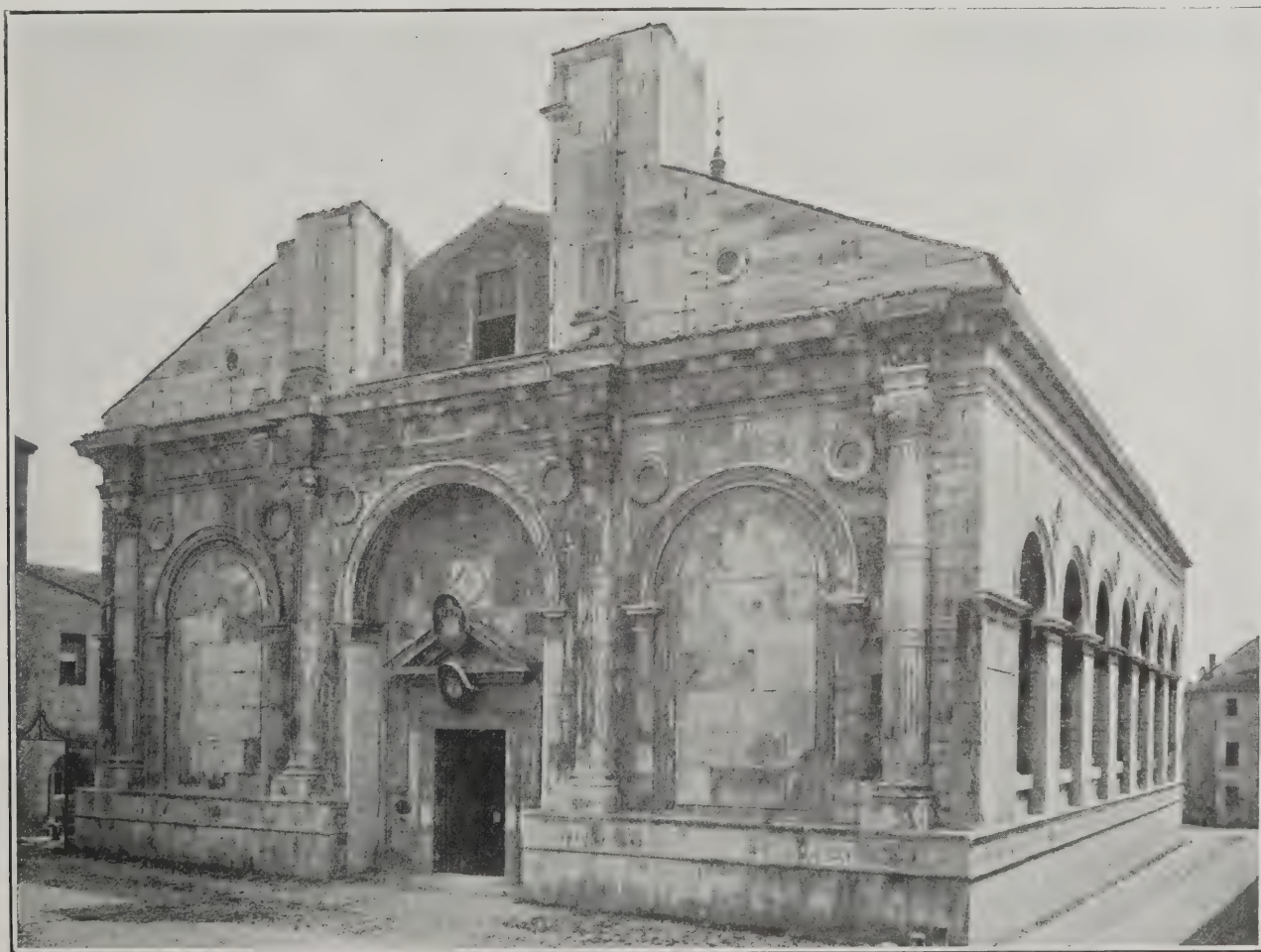
A ROUGH generalisation may describe Brunelleschi, the sculptor, of Florence, as the discoverer of the interest and value of ancient Roman buildings, from whose enthusiasm and ability the whole course of architectural progress received that new direction in the first quarter of the fifteenth century which we know as the Renaissance, and upon the yet unexpanded tide of which we are still floating down the stream of time. Similarly, a century later, we may summarise in Michelangelo's career the realisation of that unity of art—entirely unique executively in his single personality—which reveals that sculptor, painter, and architect alike fulfil one mission and serve one mistress, not three. This unity (whether a truth or a doctrine, we must each feel for ourselves) has found some verbal re-expression in our own day, though but little concrete exemplification if we except the work of that rare genius Alfred Stevens, who it is well-nigh impossible to claim as the product of the Italian national school, as he was truly English. The archæological impetus of Brunelleschi also can be easily recognised as reproduced in our own antiquarianism, as well as his struggles with the competition system and the registered trades unionism of the master builders of Florence. These influences gradually create that personality in connection with the monuments of the Early Renaissance that has been lacking in the great Gothic buildings, and we are conscious of fellow-feeling and sympathy with colleagues who thus became our professional forefathers.

In the century between the completion of Brunelleschi's struggle with the guildsmen over the construction of the dome of St. Mary of the Flowers at Florence and Michelangelo's crown of an heroic artist's career in St. Peter's at Rome, we may hope to find further illustrations of the development of our own type of architect—student, enthusiast, and practitioner.

Two Italian architects of this period will afford these illustrations. These two men are respectively aristocratic and plebeian, one having the advantages of birth, wealth, and education, the other the converse disadvantages. They are but partly contemporary, so we will proceed chronologically, but before entering into detail will generalise that the first represents the influences of literature and the second those of successful practice in the constant struggle to get work and carry it out well and promptly. But in both we find the light of a clear and sweet architectural result in graceful buildings and grand design.

Architecture and Literary Antiquarianism.

The mid-Cinquecento was dominated by one architectural writer, just as the mid-nineteenth has been, but more completely and ultimately. The earlier was the dead hand of Vitruvius, revived by the ten books of Leon Battista Alberti, and the other the "Stones of Venice," temporarily illuminated by the "Seven Lamps" of John Ruskin. The archi-



THE WEST FRONT OF RIMINI CATHEDRAL. ALBERTI, ARCHITECT.

tect in both centuries had learnt to read and to write, and as an inevitable consequence forsook the limitations of a workshop education for the fairy lands of antiquity with extraordinary and often unpractical distention of his imaginative faculty.

It is claimed, I think most uncertainly, by Swift, upon the ground of certain proportional systems, that Vitruvius was not unknown to mediæval architects; but his work was practically without effect until the break-up of the Eastern Roman Empire early in the Cinquecento directed scholars to the wealth of literary tradition and manuscripts which it embodied. Professor Aitchison in his R.A. lectures in 1905 describes the discovery of the manuscript of Vitruvius by Poggio in 1414. It was not printed till, it is supposed, 1486, at Rome, but the book is without date.

Three editions were published before the end of the century—Rome, 1486; Florence, 1496; and Venice, 1497. Fra Giocondo published his illustrated edition at Venice in 1511, rapidly followed by others. Within a century of its discovery twenty distinct editions were published, thirteen in Latin and seven in Italian, the first of the latter being in 1526.

Professor Aitchison says that all the civilised nations of Europe began in the sixteenth century to issue illustrated editions; and according to the codex Vitruvius's original book was illustrated, but that has disappeared without leaving any trace.

Alberti absorbed Vitruvius, reincarnated him, gave currency in practical application to his orders, but in liberating architecture from mediævalism enslaved it to his new classicalism, and you and I by it live and suffer; for Alberti practically rules us to-day with orders, and thereby substance for examination questions, diplomas, registration, and licences, as well as excommunications and threatened deprivation of any liberty to assume the title of architect.

Alberti's Versatility.

Leon Battista Alberti was born in 1404 at Venice, where his father, Lorenzo, was living in exile. The Alberti family was one of the noblest of the Florentine aristocracy, seeming to Machiavelli to be "rather princes than a private family." The democratic party at Florence was directed by the Alberti, the Ricci, and the Medici families; they were deprived of power and exiled by their rivals, the Albrizzi, in 1381, who directed the affairs of the city for well-nigh half a century. This was the most prosperous epoch of the republic, during which the Renaissance budded into flower, the period of Brunelleschi, Ghiberti, and Donatello.

Leon Battista was early put to study law at the celebrated University of Bologna, amidst much promise of extraordinary gifts and determined character. Versatility scarcely describes a young man who magnetised vicious horses, was unsurpassed in wrestling, javelin-throwing, and running and jumping, and a then remarkable zest for mountaineering. He had a love and a skill for music, was also a reputable painter, a medallist and sculptor, and possessed equally with a burning enthusiasm for scientific study, as then understood, a dominating love of classical literature. He was gifted, too, with a gentle temper and a conversational charm that never became commonplace. He was as thoroughly bitten with antiquarian fever as any modern student, but his literary antiquarianism found a practical sphere in the study and emulation of Vitruvius, and the revivification of Roman architectural law and practice thenceforward became a vital element in the progress of the Renaissance.

The study of ancient architectural principles proceeded through literature by Alberti, as through buildings by Brunelleschi; truth tintured by distance and matured like wine in oblivion, rediscovered with the flavour of the essays of a bygone age, was at the service of the student.

The Ten Books.

Alberti's great work, "*De Re Edificatoriâ*," was finished in 1452, but not printed till 1485, thirteen years after his death.

It is to be observed, therefore, that Alberti's work was printed and published a year before the first printed Vitruvius, both being in Latin. Alberti's book is thus the first printed embodiment of architecture as an art and science, and as such indeed it remains effective to-day.

The first book deals with site, soil, and climate; the second with materials; the third with construction; the fourth with the civic politics of building; the fifth with palaces, castles, academies, and religious buildings; the sixth with architectural proportions and ornaments; the seventh with columns, pilasters, and ornaments; the eighth with roads, pyramids, tombs, cities, streets, and public buildings; the ninth continues this and also deals with decorations by paintings and sculpture; and the tenth and last deals with water supply and the assistance that architecture affords to domestic economy.

Alberti's Chief Works.

Vasari tells us that at the time when Nicholas V., who was the first energetic and great Pope of the Renaissance, had thrown the city of Rome into utter confusion "with his peculiar manner of building" Alberti arrived, and on account of his position at once received the Pope's confidence. Bernardo Rossellino, of Florence, was at that time acting as the Pope's architect, and great schemes were in hand for an enormous Vatican palace, and for fortification at the castle of S. Angelo, and new streets.

The Pope appears to have adopted Alberti's suggestions to spare the ancient imperial monuments, which were being ruthlessly dealt with, and Rossellino is stated by Vasari to have executed the advice given by Alberti. The association of these two men is interesting in view of the similarity between the design of the Piccolomini Palace at Piacenza by Rossellino and the Rucellai Palace at Florence by Alberti. We here note at least three novel treatments connected with Alberti's name, the originality of which, based upon classical knowledge, would indicate their source in the mind of a scholar such as Alberti rather than from the ideals of the sculptor, Bernardo Rossellino. These three new motives are—first, the employment upon a façade of superimposed orders, as in Roman work; second, recourse to Roman examples for a pedimental treatment for a gable end; and, thirdly, the use of the order of a triumphal arch for an internal arcade. The first employment of a pedimental treatment for a gable elevation we see in Alberti's façade to the Cathedral Church of St. Francis at Rimini, and the façades of Sta Maria Novella at Florence and St. Andrea at Mantua furnish two other examples. Though very different from one another, as from Rimini, the elements of the arrangement are similar. The struggle with the aisle roofs below the clerestory has caused the introduction of the curved trusslike wings at Sta Maria Novella, the façade of which was erected by Alberti's friends, the Rucellai, in 1470. There is no great departure here from the usual type as seen at S. Miniato, but gently the whole mediæval scheme is brought into classical character by an element of harmonious proportion introduced by the applied orders. The interior of the great church at Mantua affords us the typical example of the third motive which Alberti introduced into Renaissance architecture by employing the arch enclosed by an order for the internal arcades. Alberti's plan is masterly in its simplicity, and the key obviously is the pair of pilasters to each arch, which space out the bays and give strength and simplicity to the lines of the plan. The internal elevation of the nave is entirely simple in scheme, though it is covered with the over-rich ornament of the epoch. The simply-coffered vault brought right down on to the main cornice is very fine in effect. It proved convincing enough, for St. Peter's is this and little more, except greatly increased scale. If we afterwards contemplate the movement imparted by Bramante or Michelangelo we must expect little to compare for direct power and practical usefulness with this system at St. Andrea



ST. ANDREA, MANTUA. ALBERTI, ARCHITECT.

exhibited in proportions which have not lost their vigour and charm, and with a refinement which seems to echo the great character of Alberti.

The Career of Bramante.

Donato Bramante da Urbino, or Donato Lazzari, called Bramante (Bramante means desiring), was born, according to Geymüller, who thought that he had identified the family house, in a small house outside Fermignano, near Urbino, the birth town of Raphael, in the year 1444, exactly forty years after Alberti. There are no reliable particulars of his early life, but we know the famous ducal palace at Urbino, the architect of which, Luciano de Lovrana, evidently exercised a considerable influence over his style, as possibly did Alberti also, before whose death, when Bramante was twenty-eight, he had worked under Andrea Mantegna at Mantua while St. Andrea was building.

For the ensuing quarter of a century Bramante practised at Milan, gaining reputation by the erection of the peculiarly-planned church of San Satiro, consisting of a transept and a nave, with a chancel built in perspective upon a flat wall—a curious exercise of talent in that newly-discovered and much-practised art. The queer chancel of San Satiro is a *tour de force*, and, one might almost confess, worth the effort. The principal achievement, however, is the octagonal sacristy with a polygonal cupola. This building is small and complete, and illustrates some interesting developments of domical design, upon which we cannot stay to dwell.

Geymüller has recounted with great industry of research the various works at Milan which can be imputed to Bramante during his long residence of about twenty-eight years in the city; which researches are embodied in his paper in the R.I.B.A. *Transactions* for 1891.

The remarkable front of the church of Abbiate Grasso near Milan is an inspiring experimental design of great boldness; it seems to have an element of pure adventure about it, and to be taking obvious risks successfully. It illustrates Bramante's earnest and constant adoption of Alberti's Romanism of the superimposed orders, and the great arched recess remained in his mind as a motive to be again experimented with when the opportunity offered. This he made for himself courageously many years after in the great open-air apse of the belvedere of the Vatican. I suspect elements in St. Andrea at Mantua which provoked the venture. There is always, perhaps, an element of wonder or risk in an arch which increases almost disproportionately with its size. Bramante's cupolas and domes grew similarly in his hand and mind with both purity and power. Sta Maria delle Grazie, the picturesque terra-cotta melange of whose exterior is so well known to us, is a brisk development of Bramante's power of drawing beautifully delicate details.

There are interesting evidences of Bramante's hand in Como Cathedral; a comparison of his south door with Rodari's northern one very instructively reveals the work of a broader mind and stronger sense of design. The ornamental genius of the early Florentine Renaissance did not become coarse in a hurry, but had a tendency, in spite of fine drawing, to tire the eye with the wealth of its delicate enrichment. The Certosa at Pavia is the culmination, erecting just at this time of the era of the ornamentists. Geymüller's suggestion that the treatment of the walls of the nave of Como Cathedral, and possibly the pinnacles to the buttresses, may be by Bramante does not seem unlikely. We do not realise that he was always dependent upon the new Roman methods, but enjoyed that local freedom which so often characterises the provincial office.

Though it was not until the fall of Ludovicosforza, the Duke of Milan, in 1500 that Bramante settled in Rome, it seems that he was there in 1495, and Vasari mentions a commission to paint the arms of the Borgia Pope, Alexander VI., now destroyed, over the holy door of the Lateran Church before the beginning of the holy year 1500. Geymüller states that he was first engaged upon a commission for the Cardinal Riario in building the magnificent palace known now as the Cancellaria. This great palace is entirely designed in the scholarly manner of Alberti, with an air of Florentine dignity and refinement that one feels instinctively to be gentlemanly. The quietness of the detail has occasioned doubt as to whether the authorship is consistent with what we know of Bramante's other work, but he was now in high repute, about the age of fifty, the centre of a group of able and active artists, with abundance of commissions.

The Cloister of San Pietro in Montorio.

In 1502 he is engaged upon the cloister of San Pietro in Montorio, a small sort of rival to the greater basilica not far off. Here he planned with fine imagination a great circular cloister surrounding a small circular temple over the sacred central spot. This tempio alone was built, but even in its solitariness, without its harmonious circumference, is a work of singular grace and charm. The purity of the forms and delicate adjustment of the proportions make this simple exercise in peristylar design almost as fascinating as a Greek temple. The evidence of a new and careful scholarship in this work is important to note in a man well advanced into middle life.

The difference in building materials between Florence, Milan, and Rome should not be forgotten as influencing the respective schools of architecture. Bramante had worked in brickwork in Lombardy all his life, and the travertine and peperino stone were unfamiliar to him. M. Müntz acutely remarks of Bramante's move to Rome that "if he wished an audience he must now build grandly, not gracefully; the Pantheon, the Colosseum, the Baths of Diocletian, these were the overwhelming examples of which he must needs take account."

The cloister of Sta Maria delle Pace at Rome was added by Bramante to the church erected by his contemporary, Baccio Pontelli, who had died in 1500. This design is one of singular simplicity and grace. It is almost nervously restrained in the employment of detail, but what is used is not finicky, nor over-refined. The simple proportions and direct sub-division of two bays over one, of a trabeated order over an arched story, are, like the ease with which St. Pietro in Montorio was achieved, convincingly natural and masterly.

Bramante's Work at St. Peter's.

When Pope Julius II. succeeded after the short reign of Pius III., Bramante was in high reputation and large practice. Julius, as we know, was a man of great political and architectural ambitions; his was to have been the great tomb by Michelangelo on which so much artistic history has turned. Vasari may be our guide for a genial description of Bramante's work for the Pope, though we must remark that probably no architect has ever had his work form the substance of research and enthusiasm so remarkable as that which Baron von Geymüller has bestowed on Bramante. Vasari describes the project formed in the mind of the Pontiff for extending the buildings of the Vatican Palace, erected by Innocent VIII., to connect with the Belvedere Villa in the gardens, forming a quadrangular theatre, and enclosing a valley. The vision of Nicholas V., that the papal palace should become the resort of all the Courts of Christendom bred a largeness of idea with regard to the palace buildings and their purposes that certainly was not cloistral. Julius wished to have two loggias, one on each side of the valley, to pass to the Belvedere, ascending from the valley by a flight of steps. Bramante, who, as Vasari says, "had great judgment and a most

ingenious fancy in such matters," devised an arrangement of superimposed orders represented by pilasters, which solved the levels progressively, beginning with the Doric for the part at the lowest level, then a second range of the Ionic, which became continuous from the first floor of the Palace to the ground floor of the Belvedere. A loggia of 400 paces long was thus obtained. The water of the whole enclosure was to be conducted to a magnificent fountain in the lower court.

The great niche above the Roman bronze pine cone which formerly stood in the atrium of old St. Peter's is one of the magnificences of which architecture may boast; not only grand, but stimulatingly useful, and suggestive as a practical design, solving by appropriating to architectural purposes the differences of the levels.

Vasari tells us that "Bramante when not impeded by the parsimony of those with whom he had to act conducted his various undertakings with extraordinary promptitude; in this case such was the zeal with which he seconded the eagerness of the Pope, who would have had the edifice receive birth at a wish rather than await the slow process of execution"—and we note and sympathise—"that the men who were labouring at the foundations carried away at night the sand and earth which they had dug out in the presence of Bramante during the day, and he then without further precautions permitted the foundations to be laid. The result of this inadvertence on the part of the master has been that his work has cracked in various parts, and is now in danger of ruin. A portion to the extent of 80 braccia fell to the ground during the Pontificate of Clement VII., and was afterwards rebuilt by Paul III., who caused the foundations of the whole to be repaired and strengthened."

The winding colonnaded staircases by Bramante are important and interesting, and seem to be the originals of the subsequent developments at the Borbermi Palace by Bernini in the next century.

We cannot now take up the story of Bramante's connection with St. Peter's; that is a chapter entirely by itself, and covered absolutely by Geymüller's great book. It must suffice to say that here are displayed consummate art and perfect judgment on the part of Bramante.

An Estimate of His Character.

Vasari says of Bramante that he was "a person of most cheerful and amiable disposition, delighting to do everything whereby he could bring benefit to his neighbour. He was the assured friend of all men distinguished by their talents, and favoured them to the utmost of his power, as was manifest in his conduct towards the graceful Raffaello da Urbino, a most celebrated painter, who was induced to settle in Rome by his means.

"This master always lived in the most splendid and honourable manner, and in the station to which he had attained. All that he possessed was as nothing to what he might and would have expended. He delighted greatly in poetry, and took much pleasure in music, hearing as well as practising improvisations on the lyre with infinite enjoyment; he would also occasionally compose a sonnet, if not in so polished a manner as we are now wont to expect, yet always giving evidence of an earnest purpose, and entirely free from errors of style. Bramante was highly esteemed by the prelates, and received various proofs of respect and admiration from different nobles, who were acquainted with his excellencies. He enjoyed very great renown during his life, and this was still farther increased and extended after his death, seeing that this event caused the erection of St. Peter's to be suspended during several years. Bramante lived to the age of seventy, and when he died was borne to his grave with the most honourable solemnities, and attended by the papal court, as well as by all sculptors, architects, and painters at that time in Rome. He was entombed in San Pietro, in the year 1514"—more accurately, on March 11, and was entombed in the Vatican Grotto.

Bramante designated Raphael as his successor in the architectural direction of the works at St. Peter's. He had been his townsman at Urbino, and his intimate pupil and friend; there seems to be proof lacking as to a closer relationship, as also for the suggested attempt to elbow out the gigantic Michelangelo from either the entire painting of the Sistine chapel or other works.

Bramante's office staff included great names like Antonio da San Gallo the younger, who afterwards continued the work at St. Peter's, and gradually the impression comes upon us that architecture in the Cinquecento had begun to take the individual habit we know now, and that with the dawn of the following century the professional was as well recognised as the enthusiastic gifted scientist, who combined the management of men with that of materials, and whose mental equipment was founded upon a reverence for the assured successes of antiquity.

In the pursuit of a high professional and artistic ideal, it will be found that study of the architectural monuments of the Italian Renaissance, rather as expressing the individuality of the wonderful men who achieved them, will not prove unfruitful in emulation, and the attainment of even practical wisdom in dealing with such problems as peculiar and impetuous clients, and to a lofty imagination even such difficulties as the valley between the Vatican and the Belvedere may become the foundation of triumphal architectural schemes.

Discussion.

Mr. C. Harrison Townsend proposed a vote of thanks, and said that Professor Pite's lecture had shown that one need not be confined to the cold rigidity of one's profession. Alberti's claims to consideration were many and varied, he having been architect, philosopher, painter, musician, playwright, and athlete. Professor Pite, continued Mr. Townsend, had not mentioned the Cathedral at Sereno, about 12 miles from Milan—a beautiful work by Bramante.

Mr. Gerald C. Horsley, in seconding the vote of thanks, said it seemed to him that Professor Pite had given the history of two great men in a way particularly interesting to them as architects. He had pointed out certain similar conditions which existed at the time of Bramante, and which existed still. A Renaissance was forced on their predecessors and seized by Alberti. We, too, were forced to have a Renaissance, and compelled thereby to study the old work. Professor Pite was perhaps more humorous than exactly accurate in saying that all our conditions were brought about by those two men. They had, it was true, brought about the orders, but they were not responsible for the registration mania of to-day. Their great confrères abroad had not found it necessary to register. The reference to San Satiro reminded him that it was Stannus, he thought, who said that Alfred Stevens was greatly influenced by that work. The combination of bronze and stone was one of which Stevens was particularly fond. Having referred to Professor Pite's quotations from Vasari's account of Bramante, Mr. Horsley said that Vasari credited Bramante with the invention of a form of timber roofing. The Villa Madama, by Bramante, had wide corridors which were roofed over with vaults. These were enriched on the inside with plaster decoration. He would like to ask whether these vaults were constructed with bricks and concrete or of timber. He thought that Vasari's remark might apply to a building of that kind. Perhaps Bramante was one of the first to use timber in that way.

Mr. Arthur T. Bolton said he was not sure that there was the contrast between Alberti and Bramante that Professor Pite seemed to indicate; nor was he quite sure that the analogy held good. Mr. Bolton then proceeded to adduce evidence from actual buildings in support of his contention. The great church by Alberti at Mantua, he continued, though among the finest of the Renaissance churches, was not as Alberti would have carried it out. The west end of the church, particularly, would have been of extreme interest, but it remained in brick. The Belvedere scheme was ruined by a



BRAMANTE'S TEMPLE IN THE CLOISTER OF S. PIETRO IN MONTORIO

building cutting the great oblong quadrangle in half. Mr. Bolton then referred to a large stone pine cone that was still in existence, and which, he asserted, was originally intended to crown the dome of the Pantheon. Geymüller's theories, he continued, were not accepted by all. Geymüller tried to prove that Bramante attempted to anticipate a great deal of the Renaissance; but they were not justified in looking back to Bramante and attributing to him ideas that took time to develop. Peruzzi was a most able member of the school of Bramante. He died young, but had left works that showed a fine appreciation of Classical design. The sack of Rome broke up the school of architecture and scattered its members abroad.

Mr. Theodore Fyfe thought that Professor Pite's paper was in the nature of a search for the personality of Bramante. It was accurate, he thought, to characterise him as the great practising architect, absorbed in his work. Alberti, however, was a most engaging personality, and one got to grips with him at once.

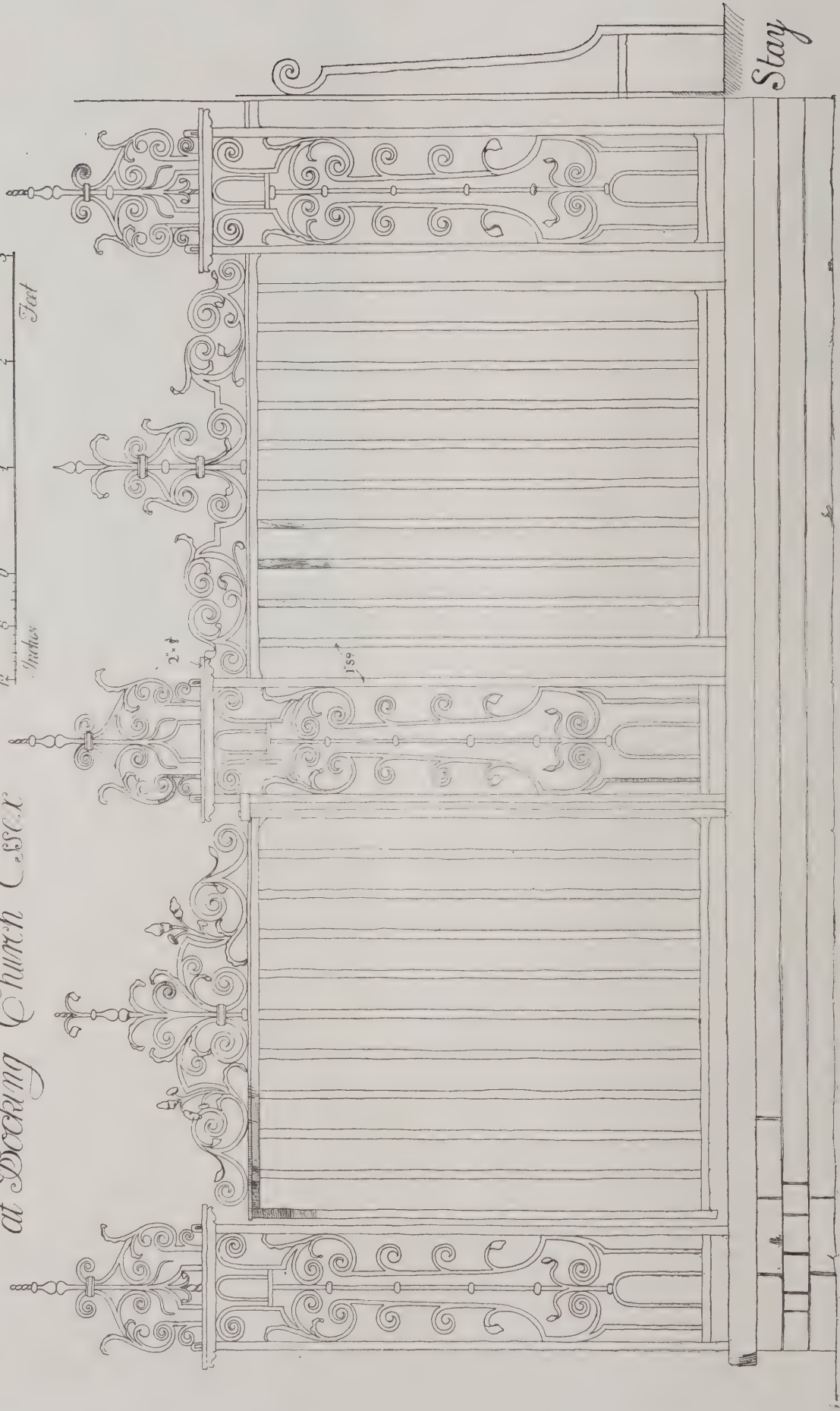
Mr. Arthur Keen said he had made a note of a paper, which it would be interesting to get for the next session—on Alfred Stevens; of whom it was said that had he not been the greatest English sculptor he would have been the greatest English painter.

Professor Pite, in reply, said he knew the passage in Vasari mentioned by Mr. Horsley, but he had never stayed to think about it. Probably it was a combined roof and vault. Alberti, if anything, was an antiquary and a philosopher, and that side of the man he ventured to suggest was dilletante. He was interested in the pine cone referred to by Mr. Bolton. But could the dome of the Pantheon have supported its weight? Wren was so interested that he had placed two similar cones on the west towers of St. Paul's.

With regard to Stevens, Professor Pite thought we lived too near his time to write about him. He (Stevens) had lived in Italy for fifteen years and had never lost its power and life.

WROT IRON RAILINGS

at Becking Church Essex



MEASURED AND DRAWN BY THEO. G. SCOTT.



WROUGHT-IRON RAILINGS, BOCKING CHURCH, ESSEX.

A NEW TYPE OF ROOF TRUSS.

SILOS, KING'S MILL, HULL.

The following particulars reached us too late to be included with the illustrations of the reinforced concrete silos at King's Mill, Hull, published in our issue for last week:—

As is well-known in this locality, and more especially on the banks of the river, all buildings of any size require that the foundations shall be piled. The surface of the ground is fairly good to sustain loads up to about 1 to 1½ tons per superficial foot, but directly the surface is penetrated, then the carrying power of the ground is very seriously reduced, so that it becomes a necessity to pile wherever heavy loads are to be carried. This has been done in the case of these silos. For the inner columns they are carried on clusters of four piles, and for all external columns on clusters of three piles. The heads of the piles are encased with concrete, and all are reinforced so that there is no possible chance of any separation ever taking place between the pile heads and the concrete over.

The silo is divided up into 15 bins, of which 14 are used for storing soya beans, which weigh about 46½ lbs. per cubic foot, while the remaining bin is used as an elevator shaft, and also for a staircase. The bins are, roughly, in about 12ft. 6in. squares, and the walls throughout are 5in. thick. The total height of the bin walls above the hoppers is about 31ft., and the approximate height from the ground to the hopper bottoms is about 22ft. Instead of the hopper bottoms being constructed of reinforced concrete, the proprietors decided to have them all made of timber work. This is not to be recommended except on the score of cheapness, because in the event of any possible chance of fire on the ground or first floor level, then the bottoms would be burnt out and the whole of the contents of the hoppers lost.

The main beams of the first floor have all been constructed of reinforced concrete, upon which the timber floor was laid. This makes a kind of T-headed beam inverted, so that the bearers can rest on the ledges, and the planking be continuous over the whole surface.

Gangways were provided at the tops of the bin division walls, and ladder irons were fixed in all the bins to enable workmen to ascend and descend. The ground and first floors are well lighted by steel casements, as is also the elevator tower, which was carried about 20ft. above the general height of the bin divisions.

The roof is of steel principals, but the gable ends are all in reinforced concrete. Nothing in the general design of the building was architecturally considered, as cheapness was one of the first considerations. The external work was all plastered after erection, so as to present an even surface. For some considerable time now this mill has been in working order, and the results so far have been of a most satisfactory nature. The concrete throughout was made 6 to 1 in the proportion of 1 part of cement, 2½ sand, and 3½ of aggregate. The well-known "Pelican" brand of cement (manufactured by Messrs. G. and T. Earle, of Wilmington, Hull) was used throughout the work, the compressive resistance of the concrete being exceptionally high—now amounting to more than 300 tons per square foot. The whole was carried out by Messrs. Stuart's Granolithic Co., Ltd., of 3 and 4, Fenchurch Street, E.C., the design having been prepared by Mr. E. P. Wells on his system.



A HUGE NEW CRANE AT GOVAN, GLASGOW.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Eastbourne Post Office.

Mr. Dudley Ward, replying to Mr. Rupert Gwynne, said a contract for the new post-office at Eastbourne had been made with Messrs. J. and M. Patrick, of Wandsworth, for the sum of £11,715.

Wages at Dover Dockyard.

Mr. Bowerman asked the First Lord of the Admiralty if his attention had been drawn to the fact that the navvies and labourers employed on contractors' work at the new Dockyard at Dover, such as drainage, concreting foundations, concrete block making, etc., for the new buildings were being paid at the rate of 22s. per week, and whether he would endeavour to ensure that such workmen were paid at a rate of not less than 6d. per hour.

Mr. McKenna replied that he was having further investigation made as to the rate of wages paid for this class of work by good employers in the Dover district, and he would be in a position to reply to the question when the investigation was completed.

Proposed Benches in the Mall.

Mr. Dudley Ward informed Captain Murray, who suggested that a few benches should be placed on each side of the Mall, that the First Commissioner of Works was of opinion, and the police authorities concurred, that it would not be advisable to carry out the suggestion.

Westminster Abbey and Coronation Stagings.

Mr. Booth asked whether the Government had taken over the fire insurance policies of Westminster Abbey during the erection and maintenance of the special stagings, and whether any sum had been added to cover the extra property at stake or the greater liability temporarily incurred.

Mr. Dudley Ward said the answer to the first part of the question was in the

negative. In accordance with the general practice of the department, no sum had been added to cover the extra property at stake.

Clerks of Works.

Mr. George Roberts asked whether representations had been received by the First Commissioner of Works from the Yorkshire Builders' Federation alleging unreasonable requests made by clerks of works; whether such allegations had been investigated; and whether the result was to uphold the vigilance of the clerks of works against whom the complaints were advanced.

Mr. Dudley Ward, in reply, said that representations had been made by the Yorkshire Builders' Federation as indicated, and the allegations were being investigated; but owing to the extent of the enquiries it had not been found possible at present to furnish a reply to the Federation. In the meantime, however, an arrangement had been made with the Federation whereby any new complaint was to be reported direct to the Commissioners, who would deal with it apart from the original complaints.

A NOTABLE NEW CRANE.

The accompanying illustration shows a new hammer-headed crane that has just been erected in the yard of the Fairfield Shipbuilding and Engineering Co., Ltd., Govan. The crane was built by Messrs. Sir William Arrol and Co., Ltd., Glasgow, and the machinery supplied and installed by Messrs. Stathert and Pitt, engineers, Bath. It has just been tested with the following loads—250 tons at a radius of 75ft., and it lifted 100 tons at a radius of 156ft. This is the heaviest load ever lifted at such a radius. The normal loads are as follows: 200 tons at 75ft. radius; 180 tons at 82ft. radius; 160 tons at 91ft. radius; 140 tons at 102ft. radius; 120 tons at 115ft. radius; 100 tons at 133ft. radius; 80 tons at 156ft. radius. It is also fitted with an auxiliary hoist which lifts 40 tons at any radius up to 156ft., also a whip hoist which lifts 5 tons to the same radius. An overhead traveller for lift-

ing oil, etc., from the ground up into the machinery hut is fitted on the back end of the jib. The crane is driven electrically, and has eight electric motors, the heaviest one being a 90 B.H.P., and the lightest a 10 B.H.P. motor. All the machinery is controlled from a control hut, on the revolving jib. The main block weighs 8 tons, and the main heaving rope 13 tons. The diameter of the main winding rope drum is 12ft., and the diameter of the auxiliary drum 6ft. Both hoists are fitted with over-riding switches, which prevent the blocks from running too high. The main hoist is also fitted with three brakes, an electric solenoid, a band brake, and an hydraulic brake. The over-all length of jib is 258ft., height over all 170ft., height to top of pedestal, 130ft.

COVENTRY MUNICIPAL BUILDINGS.

We illustrate in this issue the second-premiated design for new municipal buildings and proposed town hall at Coventry, by Messrs. Wm. E. Couch, A.R.I.B.A., and H. T. Benjamin Barnard, architects, of Westminster. The first-premiated design (by Messrs. Garratt, Simister, Buckland and Farmer, of Birmingham) was reproduced in our issue for last week, in which was also published the award of Mr. E. Guy Dawber, F.R.I.B.A., the assessor in this competition.

ROAD TRAFFIC AND CONSTRUCTION.

A paper by Mr. H. P. Maybury, read before the Institution of Civil Engineers recently, dealt with "Recent Developments in Road Traffic, Road Construction, and Maintenance."

The author said that statistics dealing with the growth of motor and the decline of horse-drawn traffic indicated that notwithstanding the increasing employment of motor vehicles the ratio, both in number and in mileage, of motor vehicles to the horse-drawn vehicles was very small.

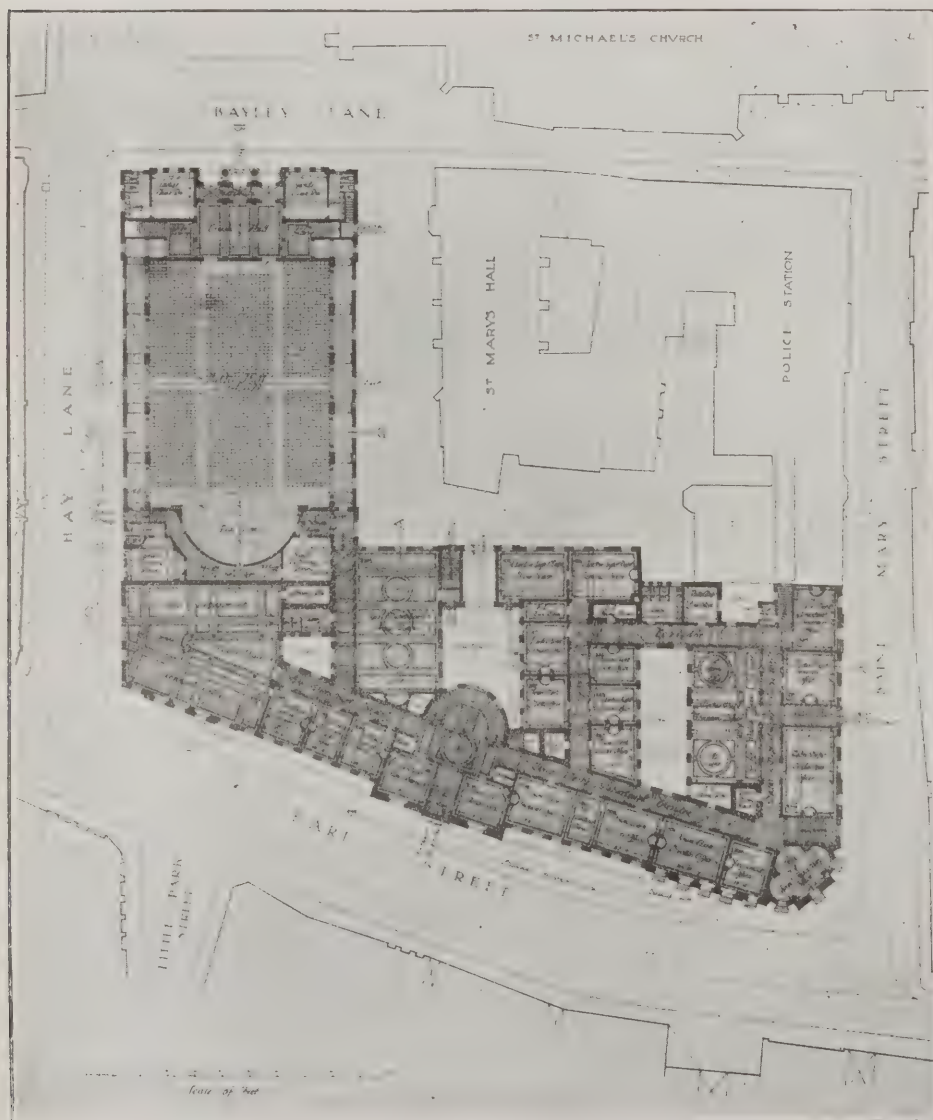
In connexion with road construction there were two general methods of preparing and laying bituminous-bound macadam—namely the formation of tar macadam, or tar concrete, and the penetration of macadam with bituminous grout. The advantages of bituminous-bound macadam might be summarised as suitability for both horse-drawn and self-propelled traffic, comparative freedom from dust, economy in maintenance, imperviousness and density, power of distribution of weight, decreased camber, and noiselessness; against which had to be set the disadvantages of increased cost of construction, possible bad foothold on gradients, and the effect of weather conditions during construction. The question of tractive effort also required consideration.

With regard to the materials comprising the road surface, agents of destruction of road-stone were physical, mechanical, and chemical; and it was interesting to consider what had been attempted, and what might profitable be attempted, to predetermine, by laboratory means, their effect upon various stones under service conditions. For this purpose a number of physical tests—which he described in the appendix to his paper—and petrological observations might be carried out, for record with the practical results obtained, in order that they might be correlated. The promising field for experimental work might thus be further and more thoroughly exploited and the laws which appeared capable of being deduced determined from organised research. With reference to the bituminous binder, the possibilities of the natural asphaltes and petroleum residues in the construction of bituminous macadam road, which was yet in its infancy, had to be fully considered.

The beneficial results, financial and otherwise, which would accrue from the adoption of the bituminous-bound form of construction suggested that certain classes of roads should be so reconstructed. The reconstruction of about 50,000 miles of roads in England and Wales might be considered upon the principle of spreading the cost over a period of seven years. The net result—upon the data assumed—was that the whole of that length of roads could be entirely reconstructed in a period of 34 years; at no period would the present cost of maintenance be exceeded; whilst at the 23rd year a gross annual saving would begin, increasing until in the 41st year there should be a maximum permanent saving of between £2,000,000 and £3,000,000 a year.

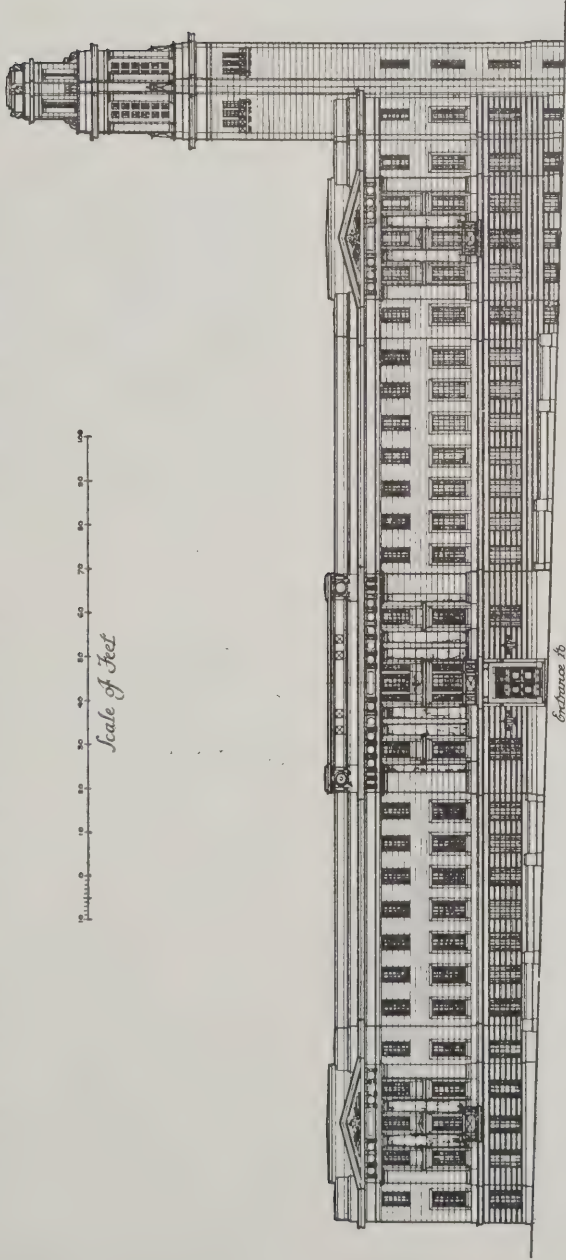
The standardization of materials of construction and the accumulation of data for the design of future roads had to be seriously considered. In the case of standardization, it was suggested that there should be carried out systematic laboratory tests and analyses of stones, the physical and petrological results of which should be recorded for each trial length of road laid under service conditions. These records were suggested with a view to correlate the physical tests with the petrological descriptions. It was desired to establish ultimately—at least for physical qualities—relative values of stones for bituminous bound and water-bound macadam. It was suggested that there should be laid down three or four standards for the bituminous binder, and that the subject should be further investigated in the laboratory. The standards for tar itself would thus be greatly improved, and such correlation in laboratory test results might be found as would enable satisfactory tests to be evolved. Further, the effects of blending tar with other substances such as petroleum residues and asphalt in various proportions could be ascertained, and also the effect of introducing various proportions of inert matter.

With regard to traffic data, the denominating factor was proposed to be dealt with by enumeration under certain headings; and the relative potential damaging effects of various vehicles upon various grades of road would be reduced to a common denominator by a scale of average weights and a scale of coefficients. It was suggested that a number of lengths of experimental roads should be constructed in localities having different intensities of traffic, and that records in connection with these should be kept. The records should include materials and methods of construction, first cost, cost

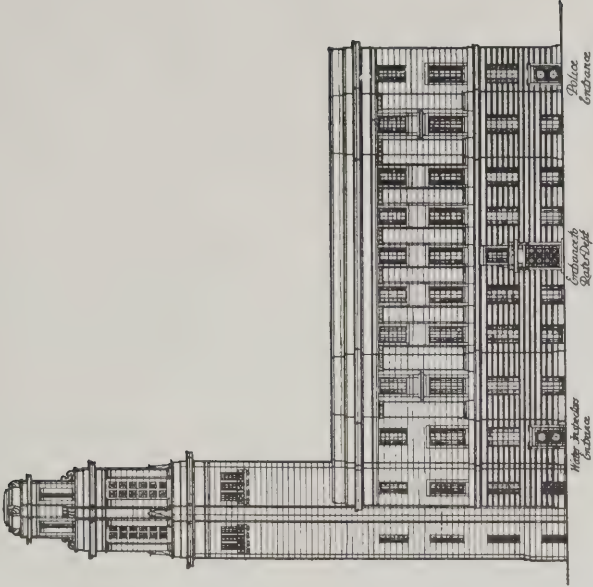


COVENTRY MUNICIPAL BUILDINGS: GROUND-FLOOR PLAN OF 2ND-PREMIATED DESIGN.
WILLIAM E. COUCH, A.R.I.B.A., AND H. T. BENJAMIN BARNARD, ARCHITECTS.

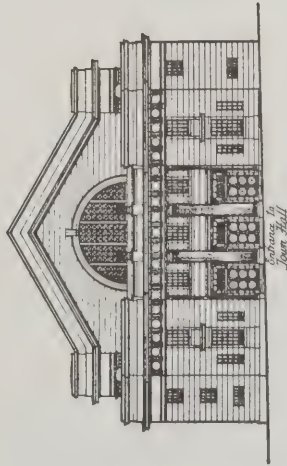
COVENTRY MUNICIPAL BUILDINGS



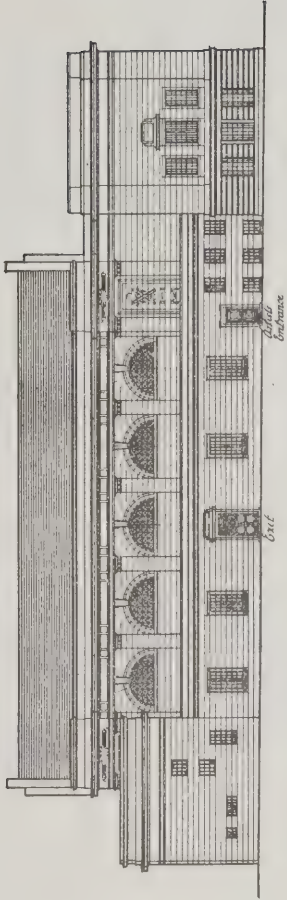
ELEVATION TO EARL STREET



ELEVATION TO SAINT MARY STREET



ELEVATION TO BAYLEY LANE



ELEVATION TO HAY LANE

SECOND-PREMIATED DESIGN. WILLIAM E. COUCH, A.R.I.B.A., AND H. T. BENJAMIN BARNARD, ARCHITECTS.

of complete resurfacing, intensity of traffic, cross-sectional wear, longitudinal unevenness, general condition of surface, cost of maintenance each year, average annual cost of cyclic maintenance, annual repayment of capital cost by instalment with interest. A table had been prepared upon these lines, with the results plotted in diagrammatic form, and this showed at a glance the points—in terms of traffic—at which each class of road became the most economical. From these results a certain formula had been deduced for the construction of roads when certain data were available. Such a formula of course would need to be used with due regard to the recorded conditions of the road surface throughout the whole cyclic period of its life, and also to the type of foundation and subsoil, gradient, prevalent weather, general meteorological conditions, and any special local conditions obtaining. In addition, the composition of the units of traffic making up the total weight of traffic used in the formula would have to be taken account of, a single heavy vehicle often having a greater damaging effect than several smaller ones of the same aggregate weight.

A second paper, by Mr. J. Walker Smith, discussed "The Improvement of Highways to meet modern Conditions of Traffic." The author said that on December 31, 1910, there were 218,680 self-propelled vehicles in the United Kingdom licensed and registered for use. This new form of traffic had been legalized without any inquiry as to what effect it would have upon the roads, and without any provision for strengthening them, thus creating a very difficult position for those responsible for road construction and maintenance. The first essential condition of successful road construction was a good foundation, and to provide a proper foundation for the 27,000 miles of main roads in England and Wales would cost £55,000,000. In connection with the heavy motor-car traffic he would refer to the anomalous position of the heavy or commercial motor, which was permitted to have an axle weight of 840lb. per inch width of tire on a wheel 3ft. in diameter, while a traction engine was only allowed a weight of 616lb. per inch width. Much damage was caused by these heavy motor vehicles, and steps should be taken to remedy this anomalous state of affairs.

TEUTONIC ARTS AND CRAFTS*.

This interesting book, which contains the substance of the Rhind Lectures given by the author before the Scottish Society of Antiquaries last year, is an attempt to trace out and illustrate the qualities in ancient artistic work which are indicative of Teutonic origin. The class of objects with which the investigation is concerned is for the most part one which consists of work on a small scale, generally in metal—personal ornaments, and sometimes weapons.

The subject is complicated by the mingling of Germanic with Latin influence, firstly through the enrolment of German legions under the later Empire, subsequently through the Teutonic invasions of Rome; so that a good deal of work exists which, though made in Italy and influenced by Roman taste, bears the impress of being of Teutonic origin; and it is this Teutonic element in work of the early centuries of

our era which the author wishes to draw attention to. A considerable portion of the earlier chapters is devoted to an historical consideration of the relations of Roman and Teuton, illustrated by small sketch maps of different periods of Roman conquest and of the subsequent inroads of the various tribes of Teutonic invaders.

The objects illustrated are mostly those found in tombs. The arms, which are considered first, are of historic rather than artistic interest; it is when we come to the articles of costume ornament that the artistic element comes in. In some of the examples given there is a great likeness



FIG. 1.—GOTHIC EAGLE FIBULA FROM RAVENNA.

to Byzantine work; the "Gothic eagle fibula" (so called), (Fig. 1) we should have called Byzantine, more especially as it was found at Ravenna; but from the seventh to the ninth centuries Byzantine influence in ornament is everywhere. What seems to distinguish the Teutonic ornament is a certain indefinable clumsiness of design and outline, in objects which otherwise have an appearance of Classic or Byzantine origin. An example is the inlaid gold eagle (Fig. 2) from the Hermitage Museum: a design which might be Byzantine, but does not seem good enough. It is stated to belong to a school of work that is called Siberian, and is represented in the Hermitage collection by "some extraordinary objects in massive gold set with turquoises and carbuncles, that in point of artistic style are quite *sui generis*."



FIG. 2.—EAGLE IN GOLD, INLAID, FROM THE SIBERIAN TREASURE IN THE HERMITAGE, ST. PETERSBURG.

In the chapter headed "Probable Sources and History of Teutonic Ornament," near the end of the book, the attempt is made to summarise the main conclusions in relation to what the author admits to be a most complicated and difficult subject, which might demand a volume to itself. Late Roman, Teutonic, and Celtic seem all to have interacted on each other. "The Teutonic art . . . covering chronologically the centuries from the fourth to the ninth, may have been affected by old classical, by oriental, and by Celtic traditions before it began to take form and substance of its own. The direct Roman influence of the earliest Christian centuries was of course nearer and more powerful, and must always be reckoned with." It is pointed out that before the Roman influence, Celtic art had prevailed in Central Europe, and would probably have left its mark on Teutonic work in the same region. In turn, thinks the author, the form of Celtic art which developed in the first Christian period of the British Isles owes its origin in some degree to Teutonic influence, although it surpassed the Teutonic work in elaboration and beauty of detail. He points out that a special form of cloisons which appears in early Teutonic inlaid brooches, and which may be described as the "step" form (the lines going in a succession of right-angle turns in the form of steps), is also a characteristic of the penmanship in Irish Celtic work.

Among the many illustrations given there is nothing more interesting, and more suggestive of the mingling of classic and

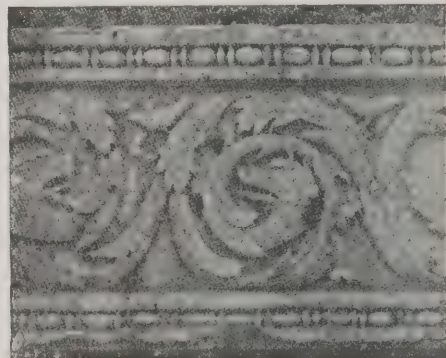


FIG. 3.—ROMAN FOLIAGE SCROLL WITH TERMINAL HEADS OF BEASTS, FROM ADAM KLISSI, AT BUCHAREST.

Teutonic (or shall we say in this case Celtic?) elements than the scroll ornament from the remains of a late Roman building at Adam Klissi in the Dolrudsha district of Wallachia, which we reproduce as Fig. 3; the original is now, we gather, in a collection at Bucharest. Here we have a piece of scroll foliage of the classic Roman type, but with the scrolls ending in heads of beasts after the well-known Celtic manner. A more significant instance of history embodied in ornament it would be difficult to find.

OBITUARY.

Mr. G. H. Fowler Jones.

The death of Mr. G. H. Fowler Jones, architect, of York, is announced. Mr. Jones had been associated in business originally with his father, an ecclesiastical architect, and had been employed in connection with several important public buildings. He was for some years secretary to the York School of Design, which was founded by William Etty, R.A., and he took a deep interest in all matters pertaining to art in the city.

*The Arts and Crafts of Our Teutonic Forefathers. By G. Baldwin Brown, M.A. London and Edinburgh: T. N. Foulis. 1910. 5s.



SOCIETY OF ARCHITECTS' DINNER.

The Amalgamation with the Institute.

The 27th annual dinner of the Society of Architects was held at the Holborn Restaurant on Friday evening last, April 28th. The chair was occupied by Mr. George E. Bond, J.P., who has been president for the past three years. Among those present were Mr. Leonard Stokes, Mr. L. Atherley-Jones, K.C., M.P., His Honour Judge Rentoul, Mr. Arthur Keen, Mr. Edwin T. Hall, Mr. Leslie Vigers, Mr. Edward White, Prof. Henry Adams, Mr. Henry T. Hare, Mr. G. I. Godson, Mr. J. S. Holliday.

At the conclusion of the dinner, His Honour Judge Rentoul, in a witty speech, proposed the toast, "The Houses of Parliament," to which Mr. Atherley-Jones replied, referring to the shadow of dissolution that rested over the Society. He believed that the older body would gain fresh vitality from the younger.

Mr. Arthur Keen, proposing the toast "The Society of Architects," referred to the question of registration. After frankly admitting his inability to see how such a scheme would serve the best interests of the art of architecture, Mr. Keen proceeded to mention the developments which had led to the representatives of the two institutions (the R.I.B.A. and the Society) agreeing upon the principles of a Registration Bill, the natural sequence to which was the absorption of the younger society by the elder. In thus relinquishing its work of registration, the Society had maintained the policy which it had always followed, and had redeemed its promise that if the

Royal Institute would definitely pledge itself to Registration, and produce a Bill with principles to which the Society could agree, the latter would stand aside and heartily support the Royal Institute. This action on the part of the two architectural bodies was the first important step towards the consolidation of the entire profession, of which registration would be the outward sign; and while it might be a matter for regret to some that the Society should cease to exist as a separate body, yet in the interests of the profession and the attainment of its object this was inevitable, and all would agree that the Society had thoroughly justified its existence.

Mr. G. E. Bond, in reply, spoke of the growth of the Society in numbers and influence, and of its work for more than a quarter of a century in educating the general body of the profession in the appreciation of the benefits which would accrue to themselves and to the public from the passing of an Act for the statutory education and registration of architects. There was now for the first time a reasonable prospect of an agreement of all sections of the profession as to the form of the Bill to be presented to Parliament. The Society had consistently expressed the opinion that it was the duty of the Royal Institute to take up this question, and now they had done so the Society would loyally support them. So soon as the principles of a Registration Bill had been agreed upon by the Councils of the two institutions, the *raison d'être* of the Society's separate existence disappeared, and in its place there was the grand ideal of a united profession under one powerful representative insti-

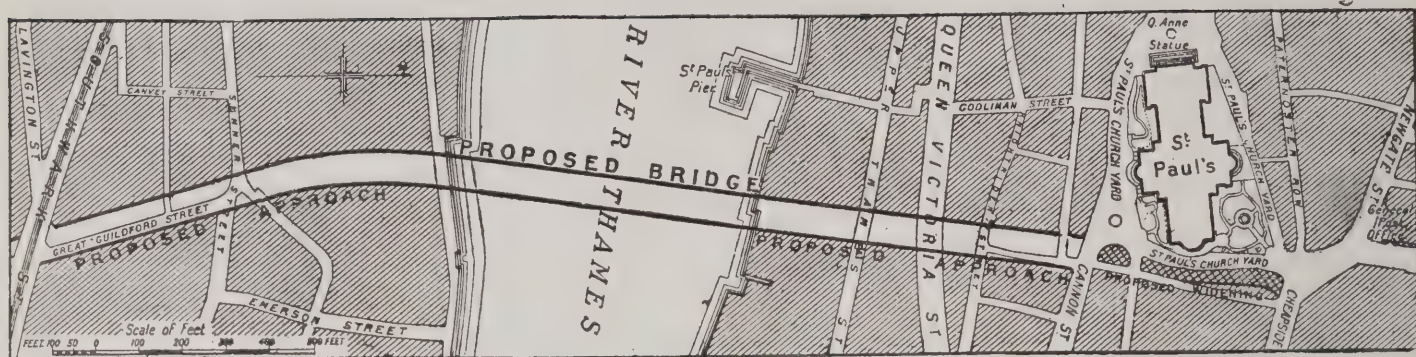
tution. He looked forward with perfect faith to the result of the new arrangements, feeling confident that though they would die as a society, they would come to life again within the parent Institute with full scope for their personal activities and energies, and thus continue to do good and useful work in the cause of registration.

Mr. E. J. Hamilton then proposed the toast, "The Royal Institute of British Architects," observing that this was the first occasion on which the Institute had been officially entertained at the Society's dinner. The main object of the Society, he continued, had been to place the profession of architecture on a basis similar to that of the legal and medical professions.

Mr. Leonard Stokes, replying, said it had been quite accurately stated that this was the first occasion on which the President of the Institute had attended the dinner in his official capacity; and he was afraid it would be the last. As he was under doctor's orders to take a complete rest cure, he would say no more, but would ask them to enjoy the rest with him.

Mr. G. A. T. Middleton proposed the toast, "The Visitors," to which Mr. Edward White, Chairman of the L.C.C., replied, saying he was strongly opposed to municipal trading, believing that some of the work should be distributed among members of the architectural profession.

Mr. Leslie Vigers, President of the Surveyors' Institution, also replied, mentioning a forthcoming conference between home and colonial surveyors, which had been arranged at the invitation of the Colonial Office.



As already pointed out in these columns, the objection to this scheme is that, by failing to line axially with the cathedral, it misses a great opportunity for civic and architectural effect.

PROPOSED ST. PAUL'S BRIDGE: THE SCHEME OF THE CITY CORPORATION.

NEWS ITEMS.

Change of Address.

Messrs. Castle and Warren, architects, have moved from Talbot House, Arundel Street, to Amberley House, Norfolk Street, Strand, W.C. Telephone as before—3552 Central.

* * *

Students' Gift to the King and Queen.

The King and Queen have graciously intimated their acceptance of an armoire which is being carved by the students of the School of Art Wood-Carving, South Kensington, as a Coronation gift.

* * *

Designs for Cottages.

Mr. W. H. Lever having offered prizes of £20, £10, and £5 to students of the University of Liverpool School of Architecture for designs for a group of seven cottages suitable to Port Sunlight, the prizes have been awarded to R. F. Dodd, W. E. Davies, and A. R. Sykes, second-year students of the school.

* * *

Additions to the South Kensington Museum.

The collection of objects bequeathed to the nation by the late Captain H. B. Murray is now on view in gallery 100 of the Victoria and Albert Museum. Included in the collection are a series of figures and vases in porcelain of the Meissen and other German factories, and German, French, and Italian metal work, including an interesting series of chalices, Sienese and South Italian types, from the fifteenth to eighteenth centuries.

* * *

Surveyors' Golf Tournament.

The Chartered Surveyors' Golfing Society will hold a one-day tournament on the Northwood club's course on Tuesday, May 9th. The fixture includes a bogey competition, stroke competition, and four-some competition. Prizes will be presented by the captain, Mr. C. R. Lowe, and the Society. All members of the Surveyors' Institution are eligible to join the society. The honorary secretary is Mr. Sydney A. Smith, 22, Chancery Lane, W.C.

* * *

A New London Hotel.

The Bonington Temperance Hotel in Southampton Row has just been completed from designs by Mr. W. Ernest Hazell, F.R.I.B.A. There are more than 200 bedrooms, and on the ground floor a large dining-room, drawing and writing rooms, a lounge, and a winter garden.

The A.A. Play.

The A.A. Play, by the kindness of the Royal Institute, is this year to be held in the Long Gallery at the R.I.B.A. premises in Conduit Street. The play will run for four nights—May 30th and 31st and June 1st and 2nd.

* * *

The decoration of Westminster Bridge.

Sir G. Frampton, R.A., Mr. G. Clausen, R.A., and Professor A. Beresford Pite have been appointed by the London County Council as a committee to carry out the decoration of Westminster Bridge for the Coronation. They have suggested that the central feature of the scheme of decoration shall be a triumphal arch of mediæval character in the middle of the bridge. The King and Queen will pass under the arch on their return from the Royal Progress through London on June 23rd.

* * *

Johannesburg Art Gallery: Mr. Lutyens appointed Architect.

The Johannesburg Municipal Council have decided to appoint Mr. Edwin Lutyens architect of the new art gallery which is to be built at a cost of £20,000 to house the picture and the sculpture chosen by Sir Hugh Lane, and recently presented to Johannesburg by Mrs. Lionel Phillips and other prominent South Africans. A South African architect to be nominated by Mr. Lutyens will collaborate with him.

* * *

Alterations at Holyrood.

In view of the forthcoming Royal visit to Edinburgh in July, extensive improvements have been made at Holyrood Palace. The scheme adopted included the opening up of three of the State rooms overlooking the quadrangle on the east side, and the installation of electric light, hot water heating apparatus, and telephonic communication between various apartments. The Royal apartments have been redecorated, the servants' accommodation has been improved, and the whole building has been overhauled and cleaned. The outlay amounts to about £8,000.

* * *

A New Book on School Planning.

Mr. Nicholson-Smith, the publisher of Mr. Philip A. Robson's forthcoming book on school planning (briefly announced in our issue for last week) requests us to state that a subscription list is now open for architects, who, on remitting 12s. with their order within the next week or two, will get the work for this sum, instead of 15s., the published price. Mr. Nicholson-Smith's address is 3, Amen Corner, E.C.

STANDARDIZATION OF WARE PIPES.

We publish below a list of members of the Sectional Committee on Vitrified Ware Pipes which has recently been formed by the Engineering Standards Committee.

The desirability of standardising vitrified ware pipes has been urged upon the committee at different times from various quarters, more particularly by the Institution of Municipal and County Engineers, which body appointed a committee for the purpose of obtaining information from their members with regard to their requirements for a standard specification. The data thus collected was then summarised by that institution, and placed at the disposal of the Engineering Standards Committee.

In January last the latter body called a representative conference of users and manufacturers to consider whether the standardisation of vitrified ware pipes was desirable. The opinion of the meeting being unanimously in the affirmative, those attending the conference were formed into a sectional committee to deal with this subject. The members are:—

Maurice Fitzmaurice	Chairman
C.M.G.	
T. Sims, C.B.	Admiralty — Director of Works Dept.
W. C. Tyndale	War Office.
F. L. Henley	General Post Office
R. G. Hetherington	Local Government Board
Ashton M. Heath & R. H. Stanger	Crown Agents for the Colonies
Edwin T. Hall	Royal Institute of British Architects
G. W. Humphreys...	London County Council
T. Cole, W. Harpur, J. Patten Barber, F. W. Pearce, & F. J. Elford	Institution of Municipal and County Engineers
Prof. Henry Adams	Royal Sanitary Institute
William Thomason	Institute of Chemistry
R. Tucker	Society of Architects.
J. H. Hanson	Surveyors' Institution
J. Farley	Institute of Sanitary Engineers
Charles Sharp	Dorset and Devon Stoneware Potters' Association
C. E. Morris, H. R. Mansfield, J. Hassall, and R. Lawton	Midland Association of Sanitary Stoneware Manufacturers
W. J. Elsworth	Northern Association of Sanitary Pipe Manufacturers
E. Lloyd Edwards...	North Wales Potters' Association
W. Oates, W. F. Pickup, and J. Johnston Green...	Potters' Association
S. J. Stiff	Southern Potters' Association
Midgley Taylor	John Taylor, Sons & Santo Crimp
E. J. Lovegrove	Borough Engineer, Hornsey
H. A. Roechling	Molesworth & Roechling
H. Carter Pegg	G. T. Hine & Carter Pegg
Leslie Robertson	Secretary.
Charles Dresser	Assist. Secretary.

THE BUILDING TRADES EXHIBITION.

List of Firms whose Exhibits are Noticed in this Issue.

Adjustable Shelving Co., Ltd., 478.
Art Pavements and Decorations, Ltd., 481.
Bath Cabinet Makers' Co., Ltd., 476.
Bath Stone Firms, Ltd., 476.
Bell's United Asbestos Co., 482.
British Stone and Marble Co., Ltd., 480.
British Uralite Co. (1908), Ltd., 480.
British Vacuum Cleaner Co., Ltd., 479.
Cakebread, Robey and Co., 483.
Campbell and Christmas, 480.
Checkfire Door Co., 481.
Coatstone Decoration Co., 480.
Comet Telescopic Mast Co., 477.
Cornes and Haighton, 476.
H. W. Culham and Co., 480.
John Davidge and Co., 483.

Davis, Bennett and Co., 477.
Durabar Co., 479.
Emdeca, Ltd., 483.
Empire Stone Co., 479.
George Farmiloe and Sons, Ltd., 477.
William E. Farrer, Ltd., 483.
Fenning and Co., 481.
Fuller's Patent Scaffolding, Ltd., 479.
Garratt's Patent Screw-down Valve Co., 483.
Godfrey Giles and Co., 478.
B. J. Hall and Co., 483.
Hartley and Sugden, Ltd., 482.
C. Jennings and Co., 482.
James Latham, Ltd., 480.
London Warming and Ventilating Co., Ltd., 481.
Manu-Marble Co., Ltd., 478.

MAXimum Light Window Glass Co., 479.
Medway's Safety Lift Co., 482.
Mellowes and Co., Ltd., 478.
H. Morris, 484.
William Moss and Sons, Ltd., 478.
National Radiator Co., Ltd., 484.
Nautilus Fire Co., Ltd., 482.
Norton and Gregory, 483.
Thomas Parsons and Sons, 481.
Thos. Pascall and Sons, 478.
Ripolin, Ltd., 476.
Stanley Bros., Ltd., 479.
Strode and Co., 476.
Hubert Todd and Co., 484.
United Stone Firms, Ltd., 477.
Valveless Syphon Co., 484.

CONTRACTORS' PLANT AT THE EXHIBITION.

In these keenly competitive times the contractor who has the most up-to-date equipment stands the best chance of submitting the lowest tenders, and not only getting the work but making a profit on it. Labour and time-saving appliances in several departments are essential to this kind of success; and, moreover, it is a wise contractor who realises that it is a good policy to scrap any machinery for which a better substitute is available. In furnishing luminous information of this sort the Exhibition is usually an unfailing resource, although the immense difficulties of transit must necessarily militate against its chances of being thoroughly comprehensive at any time. Nor is it conceivable that every fresh exhibition can contain many absolute novelties; which, indeed, in the case of expensive machinery, is not altogether desirable. As a rule, the absolute novelty is apt to be looked at askance, and even the most enterprising contractor will want to deal with it experimentally before committing himself to any considerable outlay upon it. What is more earnestly sought and more commonly supplied than absolutely novel machinery is the improvement of details in machines of established reputation.

Anything like a complete account of the machinery and appliances at the present exhibition is out of the question, but a glance round the bays may be helpful, even though it advance no pretensions to comprehensiveness.

Wood-Working Machinery.

At Stand 10, Row B, R. Becker and Co., 53, City Road, E.C., show half a dozen machines—a circular-saw bench; a 28in. band-sawing machine; a planing, jointing, and moulding machine; two combined planing, jointing, and thicknessing machines; a vertical spindle moulder; and a vertical power moulder.

Stand 2, Row A, J. Sagar and Co., Canal Works, Halifax, and 60, Watling Street, E.C. A single spindle dimension sawing machine performs almost every operation in joinery-cutting. A 30in. band-sawing machine executes general sweep-cutting. A 20in. vertical spindle moulding and shaping machine has an extra strong spindle and French spindle. A patent combined chain-cutter and hollow chisel mortising machine is serviceable for all kinds of hard and soft woods. The firm show also a plane iron and moulding cutter grinding machine, a 15in. machine for hand-planing, jointing, moulding, etc., for planing out of winding, making glue joints, stop-chamfering, etc.; a circular saw bench for cutting deals and fitches into boards; and a draw-stroke mitreing and trimming machine. Useful wood-

working machinery is also shown by Wilson Bros., Leeds, Stand 8, Row B; John Pickles and Son, Hebden Bridge, Stand 32, Row C; the Oliver Machinery Co., Ltd., Manchester, Stand 44, Row C; C. D. Monninger, Ltd., London, E.C. (chiefly woodworkers' tools, machine guards, sharpening and setting machines, etc.); Kirchner and Co., London, E.C.; and M. Glover and Co., Leeds, whose sawguards and other safety appliances are noteworthy.

Concrete Mixers, etc.

Next to the woodworking machinery, that relating to concrete mixing, etc., is probably the most important in the exhibition. At Stand 33, Row C, Stothert and Pitt, Ltd., and T. L. Smith Co., Westminster, have a Smith mixer mounted on skids, fitted with an automatic side loader and water tank, and driven by an electric motor. It is capable of dealing either with tar macadam or with concrete. The Victoria mixer is a complete self-contained portable mixing plant, weighing no more than 2½ tons. The (U.K.) Winget Concrete Machine Co., Ltd., Bowley Street, E., show at Stand 187, Row J, the Winget express concrete mixers and the Winget partition slab-making machines, which were noticed in last week's Journal, as were also the exhibits, at Stand 212, Row K, and 26, Bay, of the Ransome-verMehrs Machinery Company, Westminster, who show at the former stand several types of concrete mixers, an automatic crane skip, a cement testing machine, a vibrator for concrete *in situ*, and a jiggling machine for gravel; and at the latter stand the new Ransome tar-macadam mixer, concrete and general mixer, and a new sand spreading machine, etc. At Stand 235, Row L, F. Johnson and Co. (Hull), Ltd., have their Paragon combined hand and power concrete blockmaking machine and a concrete mixer. At Stand 12, Bay, Bristowe and Co., Ltd., have a working model of the Whalley mixer for concrete or tar-macadam. At stand 33, Row B, The Builders' and Contractors' Plant Ltd., Westminster, show the power or hand-driven Roll mixers for concrete or tar-macadam. At Stand 66, Row D, First Cottbus Cement Goods and Machine Works, London, S.E., show several hand machines making concrete and clay goods. At Stand 30, Row C, the Rawdon Foundry Co., Ltd., Ashby-de-la-Zouch, show sanitary pipe-making and testing machines, and a clay pug-mill and mixer.

Scaffolding.

The Comet Telescopic Mast is noticed in another part of the present issue. Other scaffolding appliances will be found at Stand 203, Row J, where the Patent Rapid Scaffold Tie Co., Ltd., Westminster, show the Scaffixer scaffold ties; at Stand 238,

Row L, where there is a model of Fuller's patent scaffolding, which is noticed in another part of the present issue; and at Bay 3, where Stephens and Carter show Kruse's patent cradle, and some patent wire scaffold cords.

Ladders, etc.

At Stand 9, Row B, the Patent Safety Ladder Co., Peterborough, have on view their patent safety extension ladder, and safety extension step ladder and trestle ladder, as well as the new portable tower ladder. At Stand 15, Row B, Drew, Clark and Co., Leyton, have patent telescopic extension ladders, trestles, and steps, besides builders' ladders of the usual type. At Stand 43, Row C, H. C. Slingsby, London, E.C., shows patent extension ladders and step-ladders. At Stand 178a, Row H, Kelly, Arnold and Co., London, N., have several types of telescopic ladder. At Stand 179a, Row H, the Acme Patent Ladder Co., London, S.W., show extension ladders fitted with Langton's springless locks, as well as ladder towers, fire-escape ladders for roof-exits, etc. At Stand 181, Row J, Edward Leigh, Croydon, shows a safety ladder bracket for making a temporary platform by means of ladders. At Bay 3, Stephens and Carter show a selection of builders' ladders.

Boilers and Engines.

With regard to power, boilers may be seen at Stand 194, Row J, Hartley and Sugden; and 180, Row H, Newton, Chambers and Co., Ltd. Gas engines are shown by Richard Hornsby and Sons, Stand 17, Row B, and George Waller and Son, Stand 34, Row B; while oil engines are shown at Stand 2b, Row B, by Reavell and Co., Ltd.

Miscellaneous.

At Stand 15, Row B, John Yates and Co., Ltd., Birmingham, who are manufacturers of every description of tools, plant, and stores for contractors, have a comprehensive display of shovels, forks for clayworks, picks for various uses, pipe lowering and jointing apparatus, pipe laying and quarry tools, lamps, barrows, hand-carts, lifting tackle, timber dogs, and a large number of other implements—a most varied array. Barrows and all kinds of wood goods for brickyards are shown by H. Blacknell, Hants, at Stand 41, Row C. H. C. Slingsby, London, E.C., has, at Stand 43, Row C, several kinds of wheelbarrows, trucks, and hand-carts. Stephens and Carter, Paddington, Bay 3, Gallery, show barrows and every description of plant, including their patent wire-wove rubbish baskets. Sanitary and dust-carts are the main feature at the Stand (6a, Row B, Gallery) of T. Baker and Sons, Compton, Berks.

It will, of course, be understood that this list makes no pretension to exhaustiveness.

THE EXHIBITS.

(Second Notice.)

**The Bath Stone Firms. Stand 12.
Row B.***Stones and Masonry.*

The Bath Stone Firms, Ltd., have on view a representative collection of their Monks Park Bath and Portland Stone, as well as many specimens of masonry, both monumental and architectural. The Bath Stone exhibits are as follows:—Monks Park balustrade for Barrow Hill, Virginia Water; Sundial pedestal in Box Ground; an exhibit of coarse walling in St. Aldhelm Box Ground Bath stone and rock-face random walling in Portland stone; four-cluster column in Monks Park Bath stone, with moulded and carved base and cap; and a very richly worked example of Monks Park stone with sunk carved panels. There are also exhibited specimen cubes of Monks Park, Corn-grit, Corsham, Farleigh and St. Aldhelm Box Ground. Among the Portland specimens are the following:—Part of the balustrade prepared for the New Opera House, Kingsway, with two turned and fluted columns for the same building; a section of moulded and medallion cornice; Twin Column with base, cap and four-way springer; Sample cubes from Wakeham, Coombefield, Kingbarrow, and Inmosthay quarries. One of the most interesting exhibits is a sample stone marked by Sir Christopher Wren when selecting stone from the Wakeham district for St. Paul's Cathedral. Other interesting exhibits in the same connection are the original warrants issued in the year 1698 by Sir Christopher Wren and the Committee, bearing Sir Christopher Wren's signature, for the quarrying of the Portland stone for St. Paul's Cathedral; also warrants for the raising of stone for H.M. Dock, Portsmouth, and the Royal Hospital, Greenwich. A sufficient address is "Bath."

**The Bath Cabinet Makers' Co., Ltd.
Stand 100, Row E.***Panelling and Furniture.*

This stand represents a portion of a fine oak-panelled apartment in Jacobean style. Between broad plain oak pilasters which carry massive beams supporting the ceiling is fitted a handsome chimney-piece about 10 ft. wide. The ceiling is constructed of oak joists with plaster panels. The room is panelled up to about 8 ft., and the space between panelling and ceiling is filled with a specially mottled plaster frieze. The sideboards, cabinets, tables, and chairs with which the room is furnished are faithful reproductions of excellently chosen examples of old work. Some of the chairs are models not only of elegance but of comfort; arms, backs, and seats being so cunningly shaped as to conform with the utmost complaisance, so to speak, to the most restful attitudes that, short of absolute recumbency, the human body can assume. The old craftsmen were either profound students of the functions of a chair, or they had in such matters an intuition which has not been very widely transmitted to us from Carolian and Georgian days, although, as these excellent copies bear clear witness, we are certainly not lacking in the wisdom and ability to follow their lead. The side of a dining-room in early Georgian style is also shown with wall panelling and enriched cornice in Spanish mahogany, oiled and waxed, and carving in the Grinling Gibbons style. Here, again, the genius

for comfort is strongly manifested; and the sigh of satisfaction with which one finds out that the chairs are in reality much more reposeful than they look is instantly succeeded by the reflection that in most modern furniture this experience is commonly reversed—it is apt to look more luxurious than it is. The outside of the stand is panelled with the special Nonesuch oak panelling. The firm's works are at Twerton-on-Avon, Bath, and the London showrooms are at 18, Berners Street, W.

Ripolin, Ltd. Stand 149, Row G.*Enamel Paints.*

The Ripolin stand shows an attractive elevation, of which the main features are a massive cornice and entablature supported on twelve columns, Ripolin finish in white of fine body and purity giving the whole a most striking appearance. The interior comprises four apartments, treated with various decorative coatings of Ripolin, glossy and flat. Flat Ripolin, it is to be noted, is a flat enamel paint, and not a distemper. The colours are permanent, can be applied to any material, and are applicable to either inside or outside work. It requires no varnish; the effect, in the glossy variety, being that of a fine varnish or enamel, without liability to crack or change colour. The firm's address is 35, Minories, E.C.

**Cornes and Haighton. Stand 81,
Row E.***The Model Cottage.*

The model cottage, which is without doubt one of the most popular features of the exhibition, was designed by Mr. E. C. P. Monson, F.R.I.B.A., for Mr. James Cornes, and is modelled on the lines of the cottages for which the same architect was recently awarded a gold medal. The accommodation comprises, on the ground floor, entrance hall, parlour (12 ft.

by 11 ft. 9 ins.), living-room (14 ft. by 12 ft. 6 ins.), scullery (10 ft. 4½ ins. by 6 ft. 10 ins.), bath-room, w.c., larder and coals; and on the first floor a well-lighted landing and three bedrooms—(14 ft. by 13 ft.; 12 ft. by 11 ft. 9 ins.; and 10 ft. by 9 ft. 4½ ins.). A striking feature is the octagonal entrance hall, giving access to parlour, living-room and scullery. Between the kitchen and scullery is fitted a Cornes "Model Cottager" combination kitchen. The partitions and ceilings are built of Mack plaster slabs (J. A. King and Co.), and the ceiling has been rendered ornamental by laying Mack slabs on fillets between the joists. The same firm's "King" concrete slabs have been used as the general material of construction. The plastering, which was executed by the Granite Silicon Plaster Co., Ltd., and the woodwork have been painted internally and externally with Etruscan paint by R. Gay and Co. The Durabar draught and dust excluder, which is fitted to the front door, is described and illustrated in another column. It is stated that the cottage can be built, detached, for £220, or in pairs for a reduced figure. The address of the exhibitors is, Bath Chambers, 240 High Holborn, W.C.

Strode and Co. Stand 125, Row F.*Lighting, Heating, and Art Metalwork.*

High-class apparatus, fittings, and accessories for lighting, heating and ventilation make up a varied and interesting exhibit, which demonstrates in a striking way how art and utility may be harmoniously blended. The fittings for all kinds of illuminants, electric light, air gas, etc., show a keen appreciation of the modern requirements in high-class work; while the art-metal work is in itself a strong indication of the marked improvement in taste that distinguishes the present day, as well as the growing regard for refinement and luxury. The firm's address is 48, Osna-burgh Street, N.W.



THE STAND OF THE BATH CABINET MAKERS' CO.

United Stone Firms, Ltd.
Stand 146, Row G.*Various Building Stones.*

A stand in the form of a handsome pavilion of classical design is built of various kinds of stone from this firm's several quarries, and each variety is neatly labelled so that there can be no mistake about the identity. Although both the multifariousness of the stone employed and the presence of the labels (which, however, are as neat and unobtrusive as possible), naturally detract somewhat from the æsthetic effect of the building as a building, it must nevertheless be acknowledged that the end justifies the means. It is certainly very useful to know that the fine archways of Portland stone are supported on Blue Pennant blocks and pillars, flanked by columns of Dartmoor and De Lank granite; that the base is of Red Wilderness, with a plinth of Mountcharles stone, while above the arches are two varieties, blue and grey, of Forest of Dean stone, with Nailsworth stone mouldings. Inside, the first object to catch the eye is a beautiful little sundial of Ham Hill stone; the pavilion being equipped as an open rosery. In the geometrically designed paving there has been a successful endeavour to avoid violent contrasts in the colour scheme, while the stones selected are those recommended as being the hardest wearing and most suitable for the purpose. The pavilion was designed by Messrs. Ernest Runtz and Son, and the trellis and pergola treatment and general equipment were arranged by Mr. John P. White, of Pyghtle Works, Bedford. The London office of the United Stone Firms is 13, Buckingham Street, Strand, W.C.



THE STAND OF THE UNITED STONE FIRMS, LTD.

George Farmiloe and Sons, Ltd.
Stand 101, Row, E.*Paints, Lead, Glazing, etc.*

This stand holds a large and representative display of the various lines for which this firm is held in high repute. The section for colours, varnishes, white-lead, etc., includes Filocol, a substitute for white-wash, and Zingessol, a perfected washable water paint. Sheet lead, lead pipe, compo pipe, and solders, make up a considerable plumbing section; glass of all kinds, including the well-known "Oceanic," in white and a variety of tints, is sampled; and there are casements in wrought iron, steel, and delta metal with mitre sashes in wrought iron and steel. The selection from the firm's wide range of sanitary fittings includes the Morgan dry cistern (which remains empty except when the closet is in use, thus entirely obviating all risk of overflow or freezing), besides baths, bath-room accessories, lavatories, sinks, closets, plumbers' brasswork, cocks, valves, etc. The firm's address is 34, St. John Street, West Smithfield, E.C.

Davis, Bennett and Co. **Stand 39,**
Row C.*Sanitary Engineering.*

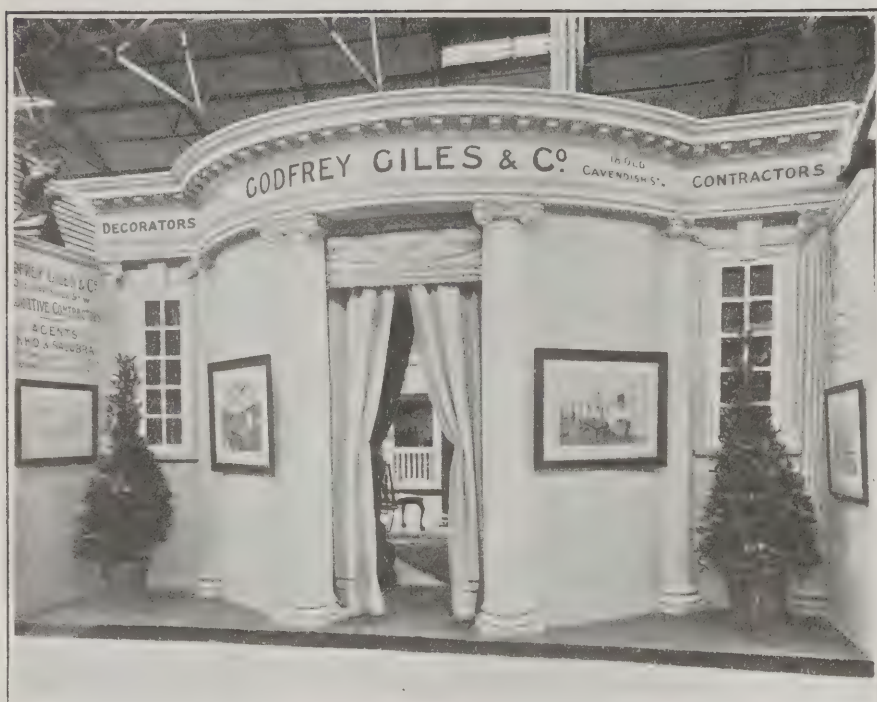
This firm, as usual, have adopted the excellent and thoroughgoing method of exhibiting model bath-rooms, fitted up in various styles, with wall linings and every detail complete, so that the effect can be seen at a glance. In this way the special characteristic of the firm as sanitary engineers and designers of complete schemes is well brought out. Special attention is paid to what may be called the environment of the bath, and the selection of marbles for dadoes, etc., shows excellent taste and judgment. The firm, however, while prepared to execute work of the

most sumptuous design and finish, do not confine themselves to any one class, but are as happy in their provisions for artisans' dwellings, hospitals, and other institutions in which economy and utility are more to be considered than the costliness and luxury proper to palace and mansion. Baths, closets, cisterns, sinks, and lavatories of various designs, materials, and prices, are shown, as well as an electric radiator for discharging warm fresh air into bath-rooms, etc., and special systems of gas-lighting and heating are demonstrated. The Eubœolith jointless floor is used in the model baths. The firm's address is—Westminster Sanitary Works, Horseferry Road.

The Comet Telescopic Mast Co.
Stand 85, Row E.*A Substitute for Scaffolding.*

The telescopic mast consists of a series of welded steel tubes of gradually decreasing diameter and thickness, adapted to slide telescopically within one another. Each section has affixed to it three collars, one at the top and two at the foot. The top and bottom collars serve to strengthen the tube, whilst the intermediate one, situated near the foot of the section, acts as a stop in conjunction with the top collar of the immediately preceding section, so that it is impossible to draw the sections out too far. The hoisting system is simple and strong. Mounted within the pedestal of the mast is a drum driven by gearing and a chain and sprocket wheel from a crank handle shaft. Round the drum a perforated untempered steel band is coiled. The thickness of this band varies from 2 mm. to 6 mm., according to the size of the mast and the load to be hoisted. Leaving the

drum, the band passes up between two rollers, one of which is provided with teeth to fit the perforations of the band. These rollers are driven from the handle simultaneously with the drum. The width of the band follows the internal diameter of the tubes, so that it has a stepped profile. Within each section the band is a sliding fit, and occupies the full diameter of the circular tube or, where the tube is of square section for raising heavier loads, the band occupies the full diagonal. As the diameter and the diagonal are respectively the longest lines which can be placed within a circle and a square, it is obvious that no further guide is necessary, the band acting as a rigid piston to thrust or push its load upwards. Thus, on turning the handle, the band is both paid out from the drum and forced to ascend within the tubes, carrying with it the top section to which it is secured without in itself buckling or bending. When the top section is fully extended, its intermediate collar, engaging internally under the top collar of the second section, compels the latter to rise with it, and this action continues between the successive tubes until all the sections of the mast are extended. Locking devices and other safeguards are provided, but there is no delicacy in the mechanism, which, as already stated, is throughout strong and simple. The applications of the mast are obviously very numerous; and builders will recognise in it a very convenient substitute for cradles or scaffolding where these present any difficulty of use. The mast lends itself with peculiar facility to the construction of tall chimneys, inside which it can be raised as the work proceeds. The firm's address is 20, Bucklersbury, E.C.



THE STAND OF GODFREY GILES AND CO.

A Notice of this Exhibit was given in our issue of last week.

**Thos. Pascall and Sons. Stand 201,
Row J.***Hand-made Bricks and Tiles.*

This stand takes the form of a pretty little building which is constructed partly of the firm's broken-colour red sand-faced bricks, and partly of their even-colour bricks, in three shades—dark, medium, and light, and in two thicknesses—that is, of four and five courses respectively to the foot. The roof is covered with hand-made sand-faced red and stained roofing tiles, which are peculiarly rich and harmonious in their colouring, a dull purple melting tenderly into deep red; the colours being the natural effect of the burning of the material, without any addition of chemicals or pigments. The tiles are comparatively thin and light, and therefore do not impose any extraordinary strain on the roof, while their tone and texture render them admirably artistic in appearance. Samples of various forms of ridge and hip tiles, valleys, angles, etc., as well as of the expanding ridge tile, to fit any pitch of roof, are also exhibited. The firm's addresses are—South Norwood, S.E., and Borough Green, Kent.

**Mellows and Co., Ltd. Stand 171,
Row H.***Sanitary Fittings and Patent Glazing.*

A model bathroom is one of the most interesting features of this stand. It comprises a wide pattern white porcelain bath, with $3\frac{1}{4}$ in. roll, and gun-metal valves and waste; a kingsware lavatory, with weir overflow and brass-hinged grating, porcelain enamelled panel frame and brackets, and gun-metal valves and wastes; a heavy white glazed fireclay w.c., with white porcelain enamelled cistern and flush pipe; a white porcelain enamelled cast iron sitz bath, with nickel-plated hot and cold supplies to douche, wave, rising spray, and jet; a mirror in white porcelain enamelled frame; and some specially made bath-room accessories. Several water-closets of various patterns are shown, as well as several modern lavatories and sinks; and special

attention is called to some examples of plumbing work executed by the firm's craftsmen. A novelty is the "Pneumonic" silent-action water-waste preventing cistern, in which there are no movable parts or chain pull. The Eclipse glazing bar, which consists of a steel core completely surrounded with a lead sheath, gives a perfectly watertight joint, and, of course, no putty or packing is required. Casement windows of the firm's own construction are also shown. London address, 28, Victoria Street, Westminster.

**The Manu-Marble Co., Ltd.
Stand 7, Row B.***Manufactured Marble.*

This firm show a flooring in plain black and white gin. squares, for which it is claimed that, both for durability and appearance, it will bear comparison with natural marble. A dado with overwall filling, constructed as a corner of, and suitable for, a bath-room, consists of a combination of greens in Manu-marble, with St. Ann's moulded capping and skirting. The flooring is laid to match in green and white in herringbone and dot pattern. There are also on view a panelled dado with moulded capping and skirting in St. Ann's and Sicilian Manu-marble, and a selection of table-tops in various colours, such as rouge, St. Ann's, Dove, etc., suitable for restaurants, garden tables, and similar services. Manu-marble is a reconstructed marble, made without the addition of cement, under extreme hydraulic pressure, and is of the same chemical properties as natural marble. It is homogeneous, and can be sanded, polished, cut, tooled, and drilled exactly like natural marble, and each variety of colour is of the same consistency and hardness, and being without flaws, sand vents, and hard veins, etc., can be scribed and cut with small chisel and hammer in the same way as glazed tiles. Odd pieces required can be cut from the slab true, without the waste which occurs in cutting. It is easily fixed like tiles, and has a good key at back. For flooring it

will wear uniformly, and not as in the case of some natural marbles, irregularly, consequently on one variety being harder than another. The markings go right through, and the colours and polish are permanent. The firm's London office is at 73A, Queen Victoria Street, E.C.

William Moss and Sons, Ltd.**Stand 202, Row J.***Reinforced Concrete System.*

At this stand, which is that of the Nostell Tile and Terra-cotta Works, whose exhibits were noticed at p. 447 of last week's issue, is shown an example of William Moss and Sons' patent fixed shear member standard reinforcement for beams, in which stirrups are inserted in the web of a modified I-joist. The special claims of the system are—extreme simplicity; ease of connecting to other steel-work; rapidity of construction; certainty of reinforcement remaining in proper position as required by the designer; proper spacing and length of shear members; positive bond between tension reinforcement and the concrete; and absence of risk of damage in transit. It is known as "the system with rigid shear members," and has been adopted in very numerous contracts at home and abroad, and in very various classes of work. Among the illustrations shown by the firm are those of the Leicestershire and Rutland Asylum at Narborough; reconstruction and extensions to the National Gallery; piles, 45 ft. long, for the N.E.R. Co.; a billiard hall at Clapham; stands at Windsor and York Racecourses; bridge and approach and water-tower at York; Ramsdale Hill Reservoir, for Nottingham Corporation; floors, etc., at Leicester Causeway Schools; elementary schools at Gainsborough; Keldgate Reservoir, for the city of Hull; and decking for Cork Harbour. The address of this firm is Queen Anne's Chambers, Westminster.

**The Adjustable Shelving and Metal
Construction Co., Ltd. Stand 193,
Row J.***Steel Shelving and Accessories.*

In the fire-prevention section which has long been a regular monthly feature of this Journal, it has been repeatedly urged that the best efforts in fire-prevention design and construction are too often frustrated by the extensive use of woodwork for the fittings. It has been pointed out that there are now available several excellent systems of shelving, etc., that are not only incombustible, but offer many other advantages—in neatness of appearance, cleanliness, and space-economy. Among these is the system exhibited at this stand, which includes metal shelving and storage of every description, for use in offices, warehouses, show rooms, hotels, factories, etc. The shelves are adjustable to almost any point, and there is no waste of space between the rows. Moreover, the accommodation can be easily increased or reduced by the addition or removal of sections. By the firm's interflooring system, in which the uprights of the shelving pass through the various storeys of a building, the walls of the building are relieved of the weight of the books or other objects to be stored, which is entirely borne by the metalwork. The firm has secured a large contract for H.M. Office of Works, whose new Census Office has been fitted with this company's steel shelving to carry 300 tons of papers. The show-rooms are at 104, High Holborn, E.C.

**Stanley Bros., Ltd. Stand 109,
Row F.***Bricks, Terra-cotta, and Glazed Sinks.*

The boldly designed and striking stand erected by Stanley Bros. shows, in harmonious blending of colours and in a variety of shapes as seen in their adaptation to internal and external angles, copings, quoins and arches, the firm's white and coloured glazed bricks, of which the lustre and texture are entirely free from the glare and crudeness that are sometimes associated with or alleged against such materials. In spite of early prejudices, glazed bricks and terra-cotta have rapidly won their way as being applicable to other purposes than those to which some fastidious architects have sought to confine them. The removal of these prejudices is largely due to the improvements in manufacture, and, side by side with these, the steady development of taste, which are manifested at this stand and elsewhere. Hence the increasing adoption of glazed ware and similar materials for facing buildings that are constructed of reinforced concrete. Some of the firm's garden ornaments decorate the stand, inside which a few examples of their sanitary ware are shown. They are also the makers of Baker's patent intercepting trap, which consists of a stoneware chamber fitted with an air-tight lid and provided with the necessary outlet and inlet connections. The wall of the box in which the inlet is formed slopes inwardly from the upper edge towards the bottom, which is dropped below the plane of the lower edge of the inlet opening, and falls away gradually to the invert side of the outlet. The box contains an aluminium check-valve disc which closes by gravity against a Stanford composition seating ring and thus excludes sewer air or liquids. Samples of Durex (Burslem) roofing tiles are also shown. Nuneaton is a sufficient address for this firm.

**British Vacuum Cleaner Co., Ltd.,
Stand 76, Row H.***Vacuum Cleaners.*

Six sizes of the various power and hand cleaners are exhibited, namely—a 2-h.p. electric motor cleaner for fixed installation work, with pump of patent Rotator type, capable of working two cleaners simultaneously, and hence suitable for large buildings; a 1-h.p. cleaner for fixed installations in private houses; a ½-h.p. portable cleaner mounted on rubber-tired wheels; a ¼-h.p. cleaner of similar design; Ideal Excelsior sweepers, with electric motor; and several types of hand-cleaners. It is no exaggeration to say that the system of cleaning thus represented has, since its introduction some ten years ago, worked wonders in the purification of interiors. The head offices are at Parsons Green Lane, S.W.

**The Empire Stone Co. Stand 21,
Row B (Gallery).***Artificial Stone, the Siegwart Floor, etc.*

The Empire stone, for which it is claimed that it is as durable as granite, and is much more durable than natural stone, because of more homogeneous composition, is shown here in a large variety of forms and adaptations. Here are paving slabs as supplied to the principal corporations; *in situ* paving, grooved and channelled, as laid for schools, asylums, infirmaries, warehouses, laundries, cattle markets, stables, etc., and some excellent samples of architectural dressings, balus-

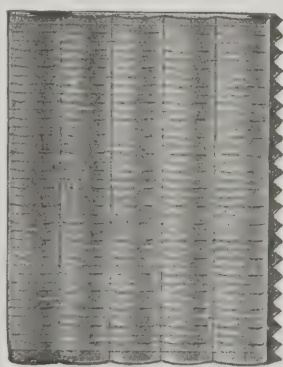
trading, and other ornamental work. A booklet containing some fine half-tone illustrations of buildings in which Empire stone has been used includes views of the new picture gallery for Lord O'Hagan at Pyrgo Park, Romford; offices and warehouses for the Dunlop Rubber Co., Ltd., at Aston Manor; works at Moland Street, Birmingham; the Mills Buildings, Nottingham; and the Sir Colin Campbell Inn, Coventry. At the same stand is shown the Siegwart fire-proof floor, which is constructed without the use of centering, is in the highest degree fire-resisting, is quick and easy of erection, and is easily cut into for the accommodation of fixtures. The firm's address is Thanet House, 231, Strand, W.C.

**Fuller's Patent Scaffolding, Ltd.,
Stand 238, Row L.***Built-up Scaffolding.*

Models of Fuller's patent scaffolding, of which a description was given a few weeks ago in the Journal, are shown at this stand. It will be remembered that the scaffolding is built up of short portable sections, so that it is easily packed for conveyance, and can be erected in positions which would be inaccessible for the ordinary scaffolding with long poles. It is claimed that by the use of this scaffolding one scaffolder and a labourer can do the work of six men working with poles and cords. The firm's address is 68, Lincoln's Inn Fields, W.C.

**The MAXimum Light Window
Glass Co. Stand 62, Row D.***Daylight Glass.*

At the stand of Messrs. Chance Brothers and Co., whose exhibits were noticed at p. 443 of last week's issue, there is also an extensive display of the MAXimum daylight and Max silk glass, to which only a very brief reference was possible last week. This glass is scientifically devised for obtaining the highest possible effects in the transmission of light. The lenses and prisms are so arranged as to give a collective and dispersive power so greatly beyond that of ordinary plain glass as to convert a dark room into a light one. It is made in four different angles to meet varying building conditions, and is cut

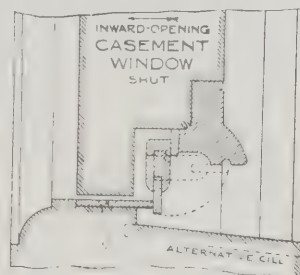


MAXIMUM DAYLIGHT GLASS.

to any required size. It may be employed in the same way as ordinary window-glass, or, to meet difficult positions, may be used in the form of a canopy. It is also made in fire-resisting quality for roof-glazing. It is said to increase the light by five to twenty times. Max silk glass is a new type of rolled glass, having on one side a series of varying parallel lines, producing the effect of watered silk. It is supplied white or in various beautiful tints, and for door panels, screens, window enclosures, partition glazing, and leaded light work, may be used with a variety of pleasing effects. A brilliant decorative glass called "Cat's-eye," and the Max (solid lead) glazing bar, for roofs, skylights, conservatories, etc., are also exhibited. The firm's address is 28, Victoria Street, Westminster.

**Durabar Co. Stands 81 and 93,
Row E.***The "Durabar" Draught and Dust Excluder
and Weather Bar.*

"Durabar," the patent of Mr. A. R. Groome, A.R.I.B.A., is a device for stopping the draught space found under every door and window. It has, we are informed, recently been installed in Windsor Castle for his Majesty the King, having earlier proved very successful at Marlborough House. The latter installation, it will be



interesting to note, was the outcome of the visit of the present King and Queen to the Building Exhibition at Olympia two years ago, when Mr. Groome had the honour of explaining the "Durabar" to their Majesties. The "Durabar" is a self-acting, springless, hingeless, and compressible-edged bar, suspended on pivots, and rising off the floor by gravitation. By means of a little metal cam screwed to the door jamb, it is brought into action automatically at the moment of latching the door. On unlatching the door, the "Durabar" flies up clear of the floor or carpet, so that there is no wear either of the "Durabar" or of the surface over which it passes. It acts, of course, as a combined draught and dust excluder and weather bar, and it is applicable to new or old, single or double hung doors, French casements, and casement windows generally. The "Durabar" may be seen on Stand 93, Row E (Messrs. Hy. Hope and Sons), and is also fitted to the front door of the Model Cottage and a number of other exhibitors' doors throughout the Exhibition. The firm's address is—Palace Chambers, Hereford.



THE STAND OF THE BRITISH STONE AND MARBLE CO., LTD.

**British Stone and Marble Co., Ltd.
Stand 148, Row G.**

Reconstructed Stone.

Reconstructed stone, of which various examples are illustrated at this stand, is produced by a patented process in which the debris of any suitable building stone is first reduced by mechanical disintegration to a granular state, and then synthesised by means of a series of mechanical and chemical operations into a material that is indistinguishable from the natural stone. It is obviously therefore not an imitation stone, only the reconstruction being artificial. Any kind of sedimentary rock, whether granular or metamorphic, can be reconstructed by the process, but the stones that lend themselves most readily to reproduction are the oolitic limestones, *e.g.*, Ancaster, Bath, Portland, Beer, Ketton, Weldon, etc.; the Magnesian limestones, *e.g.*, Bolsover, Huddleston, Roche Abbey, etc., and such other well-known varieties as Chilmark, Totternhoe and Hopton Wood. All of these stones can be reproduced in such perfection as to be indistinguishable from the natural product in appearance, while it is shown by conclusive tests that the reconstructed stone is actually superior to the latter in strength, hardness and durability. Specimens of the firm's slag stone paving, and of the Ferro-stone glazing bars, are also on view. The firm's offices are at Craven House, Kingsway, W.C.

**H. W. Cullum and Co. Stand 221.
Row K.**

Kulm Hollow Brick System.

In the construction of this stand the firm's perforated hollow bricks are used in such a manner as to display very clearly the advantages of a floor arranged on this system, and the Kulm partition slabs, which are composed of Pumice and Port-

land cement, are also seen *in situ*. The Kulm hollow bricks, which are of entirely British manufacture, are perforated in such a manner that much greater strength is obtained without increase of weight by the addition of reinforcement. Construction is extremely rapid, and may be employed over clear spans up to 30 ft., the reinforcement rods being cranked to resist shear. There is neither expansion nor thrust, and although the floor is of unusual strength, and will carry any load, the weight of a 5-in. floor is no more than 23 lbs. per foot super, or about one-half the dead weight of solid floors. They are in the highest degree fire-resisting and sound-proof.

**The Coatostone Decoration Co.,
Stand 37, Gallery.**

Liquid and Imitation Stones.

The Coatostone Decoration Co., of 77, Mortimer Street, W., are exhibiting Neal's patent stones. "Coatostone" (liquid stone) is shown in various tints for interior and exterior decoration. It can be lined out with a bricklayer's jointer, which gives a slight indentation, and with a painted line, giving it the appearance of stonework with a mason's joint. Interior and exterior rough cast, of which examples are shown, can be used for obtaining a pleasing effect of rubble work, regular and irregular coursed, and rock face work. "Nealstone" is also exhibited, resembling ashlar work, and imitating Portland stone with moulded cornices and fluted pilasters with carved caps and moulded bases. The brickwork is first rendered with cement and sand and finished with "Nealstone" from $\frac{1}{4}$ -in. to $\frac{1}{2}$ -in. in thickness. It is made in various tints to resemble any kind of stone and texture, and can be carved to suit architects' own designs. "Nealstone" is claimed to be thoroughly waterproof and

extremely hard, the texture being perfect and difficult to detect from natural stone. Several stands in the exhibition have been decorated with the specialities supplied by the Coatostone Decoration Co. Mr. A. W. Neal, the inventor of the above specialities, has been recently awarded the Grand Prix, Diploma of Honour, and the Gold Medal for his specialities shown at the Paris International Exhibition held in March last.

**Campbell and Christmas.
Stand 105, Row E.**

Stained and Leaded Glass and Other Decorations.

In the construction of this stand effective use has been made of some of the firm's designs in stained and leaded glass, and of their graceful casements. Coloured drawings of work that has been executed by the firm—such as the fine east window at St. Mary's Church, Chard—and designs for friezes suitable for various services, are tastefully disposed about the stand. Many of the designs, especially some of those executed in stained glass, show much individuality and refinement. Examples of the firm's products in stained plate glass for roofs, opus sectile and mosaic work, wood-carving, sculpture, etc., and the speciality known as the Glazmura decoration, may also be inspected at this stand. The firm's showrooms are at 4, Southampton Row, W.C.

**British Uralite Co. (1908), Ltd.
Stand 87, Row E.**

Fire-resisting Materials.

This firm's stand takes the form of a 20 ft. by 16 ft. bungalow, designed to show the adaptability of the company's manufactures for the construction of bungalows, cottages, etc. The walls are constructed of 6 ft. by 3 ft. asbestos sheets, nailed direct to wood framework, one part being arranged to show a plain flat surface inside, similar to plaster, and the other panelled out with moulding. The ceilings are constructed of Uralite sheets, part fixed direct to ceiling-joists to form a plain flat ceiling, and the remainder fixed above the ceiling-joists, thus giving the effect of an old-fashioned timbered ceiling. The roof is laid with asbestos diagonal tiles on battens, and the verandah is covered with waterproofed Uralite. The material consists of asbestos fibre cemented by a mineral glue, and therefore is light, is not subject to contraction and expansion by climatic changes, and is eminently fire-resisting. The extra charge made in the new regulations of the various insurance companies for wood partitions, etc., is waived when the woodwork is protected by $\frac{1}{2}$ -in. thick Uralite, thus reducing the rate by 1s. per cent. Asbestone, a modification of the same material, is also shown; and for "slates" formed of these materials many advantages over ordinary slates are claimed. The firm's London address is 16, St. Helen's Place, E.C.

**James Latham, Ltd. Stand 161,
Row H.**

Hard and Soft Woods.

At this stand there is a most impressive display of all the best known timbers used constructively or in decoration, as well as of some woods that are as yet not so well known as they deserve to be. In addition to the unworked timber, there is a fine display of figured mahogany, walnut, teak, and oak, as well as of veneers, panellings, mouldings, newels, marquetry, inlays, fret-cutting, etc. The firm's offices are at 124, Curtain Road, E.

**London Warming and Ventilating
Co., Ltd. Strand 233, Row L.***Stoves and Grates.*

At this stand, among the grates and ranges shown in action are the patent Florence boiler grate, which burns any sort of fuel, such as anthracite smokeless coal, and heats a 30-gallon cylinder of water, as well as two hot-water radiators; and the Record range (burning anthracite), with double oven and patent lifting fire. Also are shown the Lion anthracite continuous-burning stove; La Française boiler stove in various sizes; the Torfrida continuous burning stove, and several others. The firm's address is 20, Newman Street, W.

**The Checkfire Door Co. Stand 18,
Row B.***Fireproof Doors.*

The fireproof doors shown at this stand are of improved construction, with considerable gain in appearance, efficiency, and convenience. The thickness has been reduced to less than an inch. Hence the door is of light weight, works quietly and easily, and has none of the clumsiness and unwieldiness that is generally associated with fireproof doors. In the design and construction, the makers have acted upon the leading principles which they assume to govern this class of construction—namely, that the door should be constructed with sides of unequal strength, to allow for the "gas-pressure" which, in case of fire, is apt either to force the door open or to cause it to jam; that it must be constructed with an internal air-space, which is indispensable as a non-conductor of red heat; that it should be hung in plain brick rebates, avoiding the expansion to which metal frames might be subject; and that it should be fitted with a plate lock, which

can be fitted without weakening the construction of the door. These ideas are all embodied in the Checkfire doors, which, it will be noted, are folding doors, and are shown in two types, plain (a new type of light and elegant appearance) and panelled. The firm, whose address is Camel Road, Silvertown, E., show also their patent standard door in accordance with the "A" specification of the Fire Office Committee, and an armoured door and a plate iron door complying with Fire Office Committee and L.C.C. requirements.



THE STAND OF ART PAVEMENTS AND DECORATIONS, LTD.

**The Art Pavements & Decorations,
Ltd. Stand 158, Row H.**

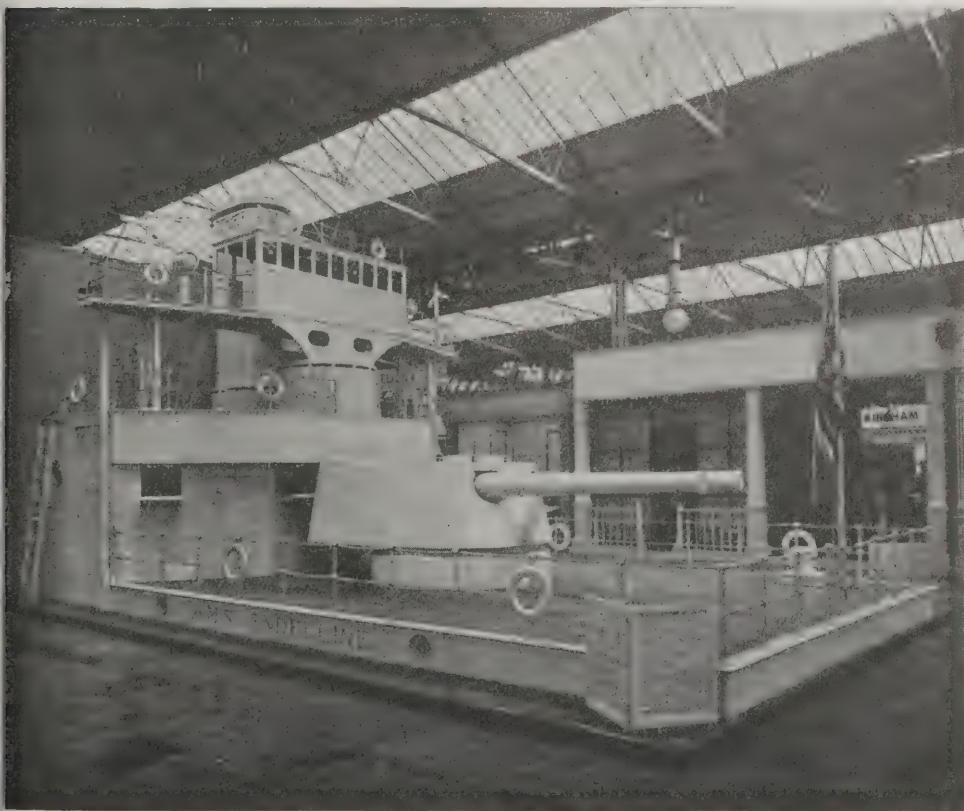
This exhibit comprises various samples of Scottish and other marble in slab, marble steps, columns, and tiles, in a variety of colours; Medmenham and antique enamelled tile and mosaic flooring of various descriptions, including Marmette, a cheap form of Terrazzo; parquetry in standard designs, wood blocks, and Armadek composition flooring. At this stand, the Douglas Granite Co. is showing some very fine granites, comprising Glencoe grey, Glencoe red, and Douglas grey. These are all singularly handsome stones, clean, even, and uniform in colour, and quite free from spots or flaw of any kind.

**Fenning and Co., Ltd. Stand 77,
Row D.***Stones and Glass Tiles, Composition Floors*

Polished and dressed granites of beautiful figure and polish are shown at this stand, as well as a selection of fine white and coloured marbles, and samples of granite, marble, and mosaic for architectural and decorative applications. Several varieties of paving and flooring in marble, mosaic, parquet, woodblock, and Durlithic composition are also shown: and there is a fine bolection-moulded selected Pavonazzo marble surround to a large fireplace opening. The firm's address is Palace Wharf, Rainville Road, Hammersmith.

**Thos. Parsons and Sons.
Stand 135, Row G.**

This firm, a notice of whose exhibits was given on p. 453 of last week's issue, and whose stand is here illustrated, wish to make it clear that the enamelling of the stand, which has been greatly admired, was not done in their own painting shops, nor under any special conditions, but that the whole of the work, from the priming coat, was executed by Messrs. Trollope, Sons, and Colls, who can certify that, after the preparation of the ground by three coats of Opako, only one coat of enamel undercoating and one coat of finishing enamel were applied.



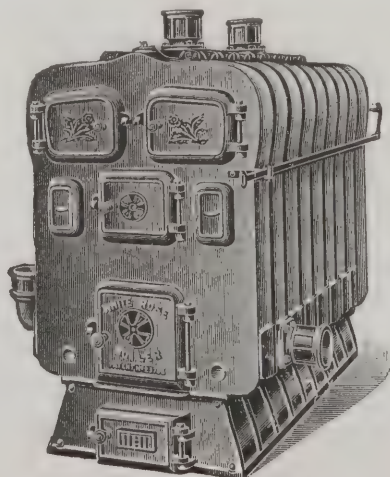
THE STAND OF THOMAS PARSONS AND SONS.

**Bell's United Asbestos Co.
Stand 28, Row C.***Poillite Roofing Material, etc.*

The Poillite specialties exhibited on this stand comprise roofing tiles, which may be fixed at 13½ in. centres and to steel laths, and are hot-cinder proof as well as frost proof; Poillite asbestos sheets of various thicknesses and sizes for walls and ceilings, and especially for electrical generating stations; veneered sheets of the same material up to 12 ft. long for railway and tramcar construction; and compressed sheets for electric installations. The material is shown both by samples and as applied. There is a large range of model buildings, and the tensile and mechanical strength of the material is demonstrated by means of testing apparatus. The firm's London offices are at Southwark Street, E.C.

**Hartley and Sugden, Ltd.
Stand 194, Row J.***Boilers for Heating and Water Supply, etc.*

This firm's White Rose sectional boilers are too well known to require detailed description. Their great merits are that they combine the highest degree of efficacy with special facilities for stoking, clinking, and cleaning, and they maintain an even temperature without requiring more than a minimum amount of attention. These boilers are of different capacities to suit various services—for heating public or private buildings, greenhouses, etc. The Sentinel series are specially adapted to the heating of small greenhouses, while the distinctive names of the Manse, the Hospital, and the Villa are sufficiently indicative of the applications for which these boilers are mainly intended. The Octradia is a new combination boiler, acting on what is somewhat paradoxically described as "a direct indirect system," as it provides heating and domestic supply from the same boiler, yet separately and distinctly. The wrought iron casing contains an internal copper tubular arrangement in the water space, providing two connections for two returns and one connection for the flow. The heating area in the copper boiler is equal to or greater than that contained in the fire-box of the iron boiler. The water in the iron boiler being heated by fire transmits such heat to the water in the copper boiler, which water circulates freely and cleanly into the usual hot water tank and is used for domestic purposes. The water in the



TWO BOILERS EXHIBITED BY HARTLEY AND SUGDEN, LTD.



The "Bush" Fire.



The "Meseta" hot-water supply boiler, by Messenger & Co., Ltd.

EXHIBITS AT THE STAND OF THE NAUTILUS FIRE CO., LTD.

iron boiler may thus be used, separately and independently of the domestic supply, for heating purposes. Both systems may be in use at the same time, or either may be cut off or shut down so as to reduce the duty of one and give greater impetus to the duties of the other. In cases of any alterations, etc., the water in the domestic supply may be drawn off entirely whilst the boiler is still in use for heating. A sufficient address is Halifax, Yorks.

**The Nautilus Fire Co., Ltd.
Stand 230, Row L.***Bush Fire, Nautilus Grate, and Meseta Boiler.*

The Bush fire, which was first exhibited at Olympia two years ago, is now shown in environments of architectural design. Several architects have been engaged in the work, and in particular the name of Mr. A. W. Kenyon, A.R.I.B.A., is mentioned as the designer of suites. The Nautilus smoke-curing grate is also exhibited. At this stand is exhibited also the Meseta boiler, the adaptability of which to the heating of motor-houses

is demonstrated under working conditions, which serve likewise to show that this compact and convenient boiler is applicable to many similar purposes.

**C. Jennings and Co. Stand 92,
Row E.***Staircase and other Joinery, etc.*

Some excellent samples of joinery on view at this stand include a flight of stairs, various kinds of doors, a shop-front, garden gates, fret-cut grilles, various windows, and several mantelpieces, as well as samples of block-flooring, electric light casings, and other varieties of woodwork. A smoke-cure chimney-pot is also shown. Address, Pennywell Road, Bristol.

**Medway's Safety Lift Co.
Stand 191, Row J.***Electric Passenger Lifts.*

The electric passenger lift shown at this stand, under excellent working conditions, is operated by two different systems of control—by means of pushes in the car and on the landings, and by a switch fixed in the car, the former being fully automatic. The motor used has been built to Messrs. Medway's specification by the British Thomson-Houston Company, and the gear is totally enclosed in a cast-iron oil-bath, giving automatic lubrication to all bearings. The motor is direct-coupled to a self-sustaining worm reducing gear, which drives the lift by means of a V-grooved wire rope driving wheel, a powerful electromagnet brake being fitted to the gear equipment. We understand that the firm is at present engaged in executing about forty contracts for this lift, which is very neat and compact, and is British made throughout. Absolute safety and fully efficient control are prominent features of the lift; and the firm show also a comprehensive display of efficient automatic controlling apparatus. An easy working and noiseless hand-power self-sustaining dinner or service lift, sustaining a load in any position, is also shown. The firm's London offices are at 10, Bush Lane, Cannon Street, E.C.

**Norton and Gregory, Ltd. Bay 1,
Gallery.***Drawing Office Requisites, Surveying
Instruments.*

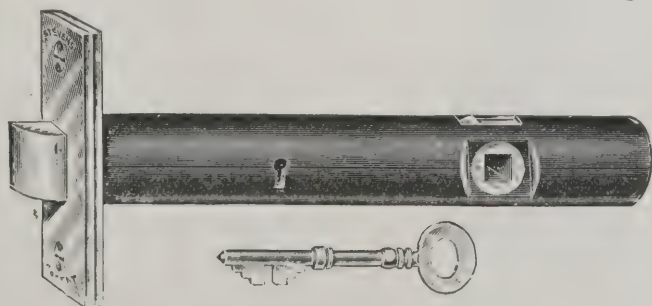
By the well-known Velography process, reproductions of plans on every kind of medium are made with great speed and with the most excellent effect; those taken on Record tracing linen being absolutely permanent, and therefore accepted as equivalent to hand-made tracings. The Arcus sun printing frame is light, simple, and portable, and gives perfect contact. The Perfect drawing table can be adjusted to any height and any angle, and is fitted with a patent T-square which leaves the left hand entirely free. Special attention is directed to the new pattern theodolites, which have very rigid and durable up-rights, and to the solid-base engineer's level, in which the base and the telescope are cast in one piece. The firm's London address is Castle Lane, Buckingham Gate, S.W.

**B. J. Hall and Co., Ltd. Stand 16,
Row B, Gallery.***Copying Machines and Drawing Office
Appliances.*

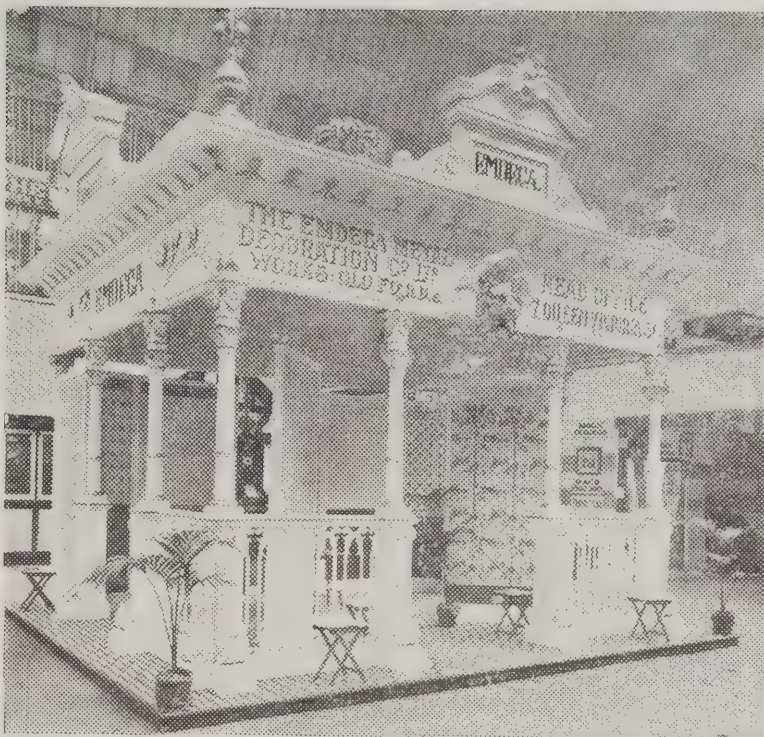
Prominent among this firm's exhibits is Hall's patent drum continuous copier, a double machine which prints two classes of paper at one time, and deals with copies at any length. It is simple in construction, inexpensive in upkeep, and has an output of 150 double-elephant blue prints per hour, with a current consumption of only four units on a 200-volt circuit. It can deal with either small or large tracings. The patent vertical electric copier is a pillar machine to deal with two tracings 42 in. by 30 in. The Catena is a new patent adjustable drawing table with a large range of movement and independent control of horizontal and vertical motions. Drawing cabinets, roll-up sketching boards for architects and surveyors, etc., Ordoverax photo-prints, and a selection of up-to-date surveying and drawing office instruments and materials, make up an attractive exhibit. The firm's address is 39 and 23, Victoria Street, S.W.

**Cakebread, Robey and Co.
Stand 40, Row C.***Sanitary Apparatus and Stevens's Patent
Locks.*

Besides the drain machines, patent lock-fast joints, smoke-testing machines, drain-testing plugs, and other apparatus and accessories for which this firm has a high reputation, there are exhibited at this stand samples of the Stevens patent locks and latches. The Stevens locks are of barrel form, and are so compact that they can be fixed in a mortice made with a 1-in. twist bit, and thus without weakening the tenons of the door. They have no delicate working parts, being actuated by a large spiral spring, which, unlike the weak lock-springs of ordinary type, is so strong that it will probably last as long as the door itself; and the other parts of the mechanism



STEVENS'S PATENT BARREL LOCK.



THE STAND OF EMDECA, LTD.

ism are equally durable. The lock is, in fact, a model of strength and efficiency. Address, 86, High Street, Stoke Newington, N.

**William E. Farrer, Ltd. Stand 5,
Row B, Gallery.***Sewage Distributors.*

Here are exhibited Messrs. Farrer's patent facile rotary distributor and improved distributor for rectangular beds. For the facile distributor no dosing syphons or intermitting valves of any description are required. In the centre of the standpost is a patent gauging tube, by means of which the supply to the apparatus can be cut off when a given level in the supply chamber is reached; special and careful provision being made for equality of distribution. The revolving ball head is of new and greatly improved design, reducing friction to a minimum. Other specialities are patent fixed sprays and sewerage ironwork of every description. The firm's address is—Star Works, Cambridge Street, Birmingham.

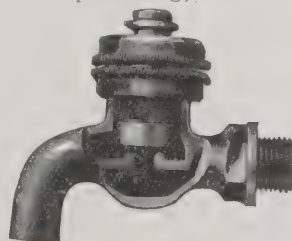
**John Davidge and Co. Stand 6,
Row B.***An Effective Chimney Pot.*

At this stand is given a convincing demonstration of the efficiency with which downdraught is prevented by a very neat form of chimney-pot and ventilator, in which there are no moving parts to get out of order. The pots, besides being unobtrusive in appearance, are apparently capable of the highest degree of efficiency,

both in smoke prevention and as a means of ventilation. They are so constructed that an updraught is induced in the flue no matter in what direction the wind may be blowing; a descending current striking down on the cover is deflected outwards and downwards between the pipe and the windguard past the outlet, thereby inducing an upward current in the pipe; an upward current passes between the pipe and the windguard inducing a similar updraught in the pipe; and a horizontal current draws the smoke out of the pipe on the lee-side. These pots, which are constructed in various patterns, either round or flat panelled of any desired colour, and of various sizes, can be made to the architect's own design. The firm's address is 6, Holborn Viaduct, E.C.

**Garratt's Patent Screw-down Valve
Co. Stand 12, Row F.***Ideal Screw-down Taps.*

At the same stand at which Mr. F. H. Brook shows various specimens of bricks, the Florite opal tiling, and the Stocal



GARRATT'S IDEAL SCREW-DOWN TAP.

patent tiling, are exhibited in action. Garratt's patent Ideal screw-down taps, which have been adopted by H.M. Office of Works, the Sutton Trust, and for use in several other large industrial dwellings. In this tap the piston slides, and consequently the seating always closes without torsion or shearing effect, which in ordinary screw-downs soon wears out the washers; and the screw of the Ideal, working out of contact with the water, is not liable to corrosion. These taps, therefore, are much more durable than those of ordinary type. Mr. F. H. Brook, 11, Queen Victoria Street, E.C., is the agent.

**Hubert Todd and Co. Stand 8,
Row B, Gallery.**
Concrete Specialities.

A fine feature of this stand is a beautiful Renaissance doorway in granite concrete from the design of Mr. John Cash, F.R.I.B.A., who has also designed a handsome column for a sundial which has been constructed of the same material. These are set in ornamental granite concrete paving, in red, buff, and grey; the firm being specialists in all kinds of concrete pavings. Address, 53, Victoria Street, S.W.

**Morris's Sanatorium Window
Screen. Stand 121, Row F.**
A New Fresh-air Inlet.

At this stand is shown a screen consisting of a frame in which are mounted two panels of perforated or reticulated material, between which is inserted a sheet of foraminous material. The screen, which acts as a filter to the air entering an apartment, eliminating blacks, dust, and impurities, can of course be made of various sizes, to suit private dwellings, workshops, or sanatoria. The inventor is Mrs. H. Morris, 24, Minard Road, Catford, S.E.

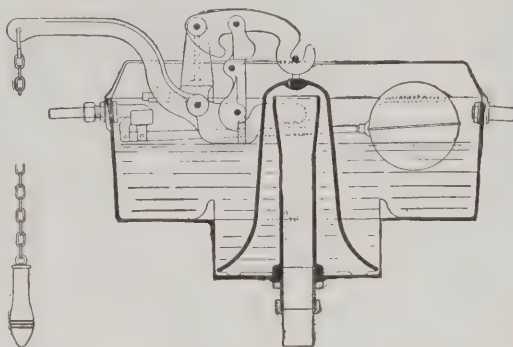
**National Radiator Company, Ltd.
Stand 178, Row H; 94, Row E;
and 54, Row D.**
Ideal Radiators and Boilers.

Although this firm are not themselves exhibiting, their Ideal Radiators and Ideal

Boilers are being shown on the stands of no less than three of the prominent heating engineers who are exhibiting, namely, Messrs. Werner, Pfeleiderer and Perkins, Ltd., Messrs. J. F. Phillips and Son, and Mr. Thomas Potterton. The firm's general offices are at 439 and 431, Oxford Street, W.

**The Valveless Syphon Co. Stand
88a, Row E.**

The Waterwitch Patent Cistern.



The Waterwitch patent bell syphon cistern shown at this stand embodies an important improvement on the ordinary type of bell syphon system. The bell cistern is all that can be desired as regards simplicity of construction and general

effectiveness; but, hitherto, owing to the direct application of the pull lever to the bell, if the pull is not released and the bell allowed to fall freely by gravity, a partial flush only is effected. This defect is removed in the Waterwitch by an arrangement of jointed collapsible connecting links so arranged that when the lever is operated the bell falls by the full force of gravity, and always gives a perfect full-bore flush. The working of the syphon is noiseless. The firm's address is Kirkstall, Leeds.

**AN ACCIDENT AT THE
EXHIBITION.**

What might have been an accident fraught with serious results occurred last week on the stand of the British Ceresit Waterproofing Co., Ltd. A feature of the exhibit was four large glass columns about 5ft. high and 10ins. in diameter imbedded in pedestals made of cement mixed with "Ceresit" and containing water to show the imperviousness of the preparation to moisture. On Wednesday the sun was shining fiercely on one of these, and the glass, not being able to expand, broke, letting out the water, which flowed over the stand and down from the gallery on to the exhibit beneath. Fortunately the glass column, although badly fractured, remained in position until removed by a member of the "Ceresit" staff. Had it fallen over the gallery rail (to which it was close) the results might have been disastrous.

**LONDON MASTER BUILDERS'
ASSOCIATION.**

The Council of the London Master Builders' Association met on Tuesday, April 25; the president (Mr. G. Bird Godson) in the chair. The following reports were submitted and approved:—(1) Dangers of Lead Poisoning among Painters, Plumbers and House Decorators. The members to give evidence before the Home Office Departmental Committee on the subject are:—Mr. G. Bird Godson (Messrs. G. Godson and Sons), president, Mr. James S. Holliday (Messrs. Holliday and Greenwood Ltd.) president, Institute of Builders; Col. G. Howard Trollope, V.D. (Messrs. Trollope and Colls, Ltd.), Mr. Thomas Hall (Messrs. Hall, Beddall and Co), Mr. W. J. Styles (Messrs. J. Styles and Co.), Mr. F. L. Walker (Messrs. Jas. Shoolbred and Co.). (2) The Quantity Surveyors' Association's "Suggestions for Items to be embodied in all Preliminary Bills." The Council forwarded comments on these suggestions. (3) Payment for Ante-time. Other matters of trade interest were considered. Several new members were elected.—THOMAS COSTIGAN, Secretary.

*The Coignet System of Reinforced
Concrete.*

Messrs. Edmond Coignet, Ltd., 20, Victoria Street, Westminster, have just published a booklet, containing 122, large quarto pages and more than 200 illustrations, describing in detail their system of reinforced concrete construction, and its application to many important buildings. Pressure on our space consequent on the amount of attention demanded by the Building Trades Exhibition (where, by the way, as mentioned last week, Messrs. Coignet have an interesting stand—186, Row E) prevents further description of the book at present, but we hope to give a further account of it on a future occasion.



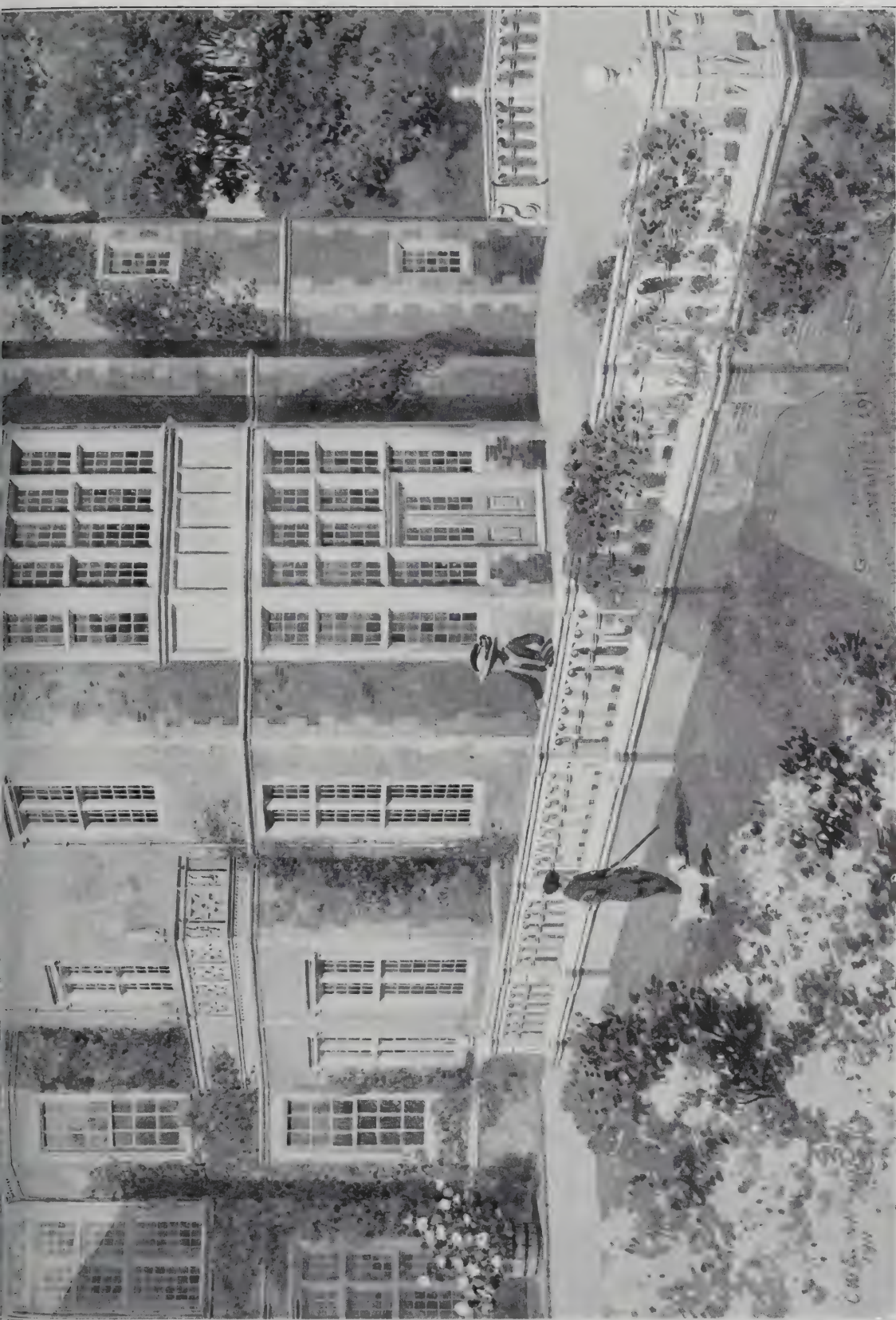
A notice of this exhibit of bricks and tiles appeared in last week's issue.

THE STAND OF JAMES BROWN (LONDON), LTD.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, May 10th, 1911.

NEW WING AT
MONTAGUES' HALL,
CAMBRIDGE.





GOTCH AND SAUNDERS, ARCHITECTS
(Royal Academy Exhibition.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 10th, 1911.

Volume XXXIII.

No. 650.



This scheme of which a full-page illustration appeared in the "Standard" of May 3rd, shows the graceful archway which will be erected at the Oxford Street and Piccadilly end of Bond Street. Red drapery will decorate the archway, and the laurel swags and cartouches will be suspended at 45 ft. intervals. Mr. Brangwyn's scheme has been accepted by the committee of frontagers, and will be carried out by Messrs. Paul Turpin and Co., of Berners Street.

SCHEME OF CORONATION DECORATION FOR BOND STREET. DESIGNED
BY FRANK BRANGWYN, A.R.A.



This drawing (which is exhibited at the Royal Academy) shows the elevation submitted by the architect, at the request of H.M. Commissioners of Woods and Forests, for a block of business premises in Regent Street proposed to be rebuilt by clients of Mr. Hornblower who hold Crown leases.

BUSINESS PREMISES, REGENT STREET, LONDON. GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 10th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 850.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Architecture at the Paris Salon.



GENERALLY speaking, when one enters the architectural gallery at the Salon by the steps out of the central court, the first thing one sees is some enormous frame with a visionary design for a palace in honour of genius, or something of that kind, on a scale belonging only to an architectural Utopia. This year, the first thing

that meets our eyes is something more practical, in the shape of complete drawings of one of the underground stations on the Nord-Sud Paris railway, by M. Bechmann; a very good piece of work. The station is roofed with vaults springing from a series of massive circular columns covered with a simple geometrical surface design, which appears to arise out of a system of concrete-steel structure; it does not quite explain itself, but the visible effect is good; the columns are crowned with low capitals of quasi-classic type. Some flat coloured decoration is introduced in the walls of the staircase leading from the street.

Visionary designs are so prevalent at the Salon that it is rather a relief to meet with something practical at the outset. Whether M. Capelle's project for a Channel tunnel is to be regarded as visionary or practical may be a question; he shows no detailed section of the construction of his tunnel, so we have to take that on trust. There is a section of the channel with an exaggerated vertical scale, showing the placing of the tunnel (evidently a tube), which at two points on its route makes a jump upward out of the bed of the channel into the water, but with what object is not evident. This first length of the gallery has, however, as usual, its vast schemes of impossible or improbable drawings; they seem put here to be out of the way, as this section of the gallery, running parallel with the front of the building, is the least important part of the exhibition. There is M. Migeon's ambitious scheme for "Un Yacht Club en Méditerranée," which covers a whole peninsula of land, and shows a new idea in the decoration of a building, in the shape of a series of little fountain jets rising vertically out of vases on the balustrade. There is M. Lévy's "Un Panthéon de l'Art," the chief object of which is to show six mural pictures (not without attraction) symbolising the great epochs of art. There is M. Brandon's enormous series of drawings, splendidly executed, of a scheme for the restoration of the parish church of St. André, at Chartres. The existing church appears to consist only of nave and transepts, cut short by a small river which runs immediately east of the transept. What is left of the architecture seems to be very quiet thirteenth-century Gothic, and not much of it. The architect's scheme is to build the choir partly on a lofty pointed arch spanning the river, a very good idea so far; but the whole design is an immense medley of modern French Gothic with all its strange tricks of detail, the effect of which would be not to "restore" but to crush out of all memory of its existence the ancient church. It is a salient example of what French architects mean by "restoration."

The principal exhibit of the year is always to be found in the gallery at the end of the building, at right angles to the main front, and it is almost always a series of drawings and restorations of some monument of ancient architecture. This year the principal exhibit takes a rather more practical turn; it consists of M. Prost's splendid set of drawings of "S. Sophia at Constantinople and its surroundings in the Sixth Century," but the sections are especially devoted to a study of the present structural condition of the building. They are covered with memoranda on this head, and with plumb-lines showing the divergence from the perpendicular of some of the great piers and arches; memoranda which are rather alarming reading. One of the four great arches which carry the dome is leaning outwards to a serious extent; two of the main piers are described as being in "très mauvais état," vertical fissures being visible for a considerable portion of their height. Among the peculiarities of structure are arches built entirely with vertical joints, having the form in section of a rather flat arch, but built with voussoirs, which are all placed vertically and without radiating joints. The lower storey of the narthex appears to be roofed in this way; in the upper storey they have thought better of it, and built the arch with radiating joints. This, like the horizontally bedded arches at Mycenæ and elsewhere in the antique world, is a curious example of the employment of the arch form without genuine arch construction. In his large perspective section of the structure of the whole building, M. Prost shows the structure of the dome as consisting of brick arches rising from the piers between the windows at the base of the dome, and structurally separate. Is this correct? It has been assumed as probable that the dome of S. Sophia, in accordance with the typical Eastern practice, was built without centering, as a homogeneous dome always can be built for about three-quarters of its height, though a centering (resting on the completed portion) would be required for closing it in. But if the dome were really constructed as M. Prost shows each of those ribs would have required a centering; and we feel some doubt as to the correctness of his reading of the construction. If he is right, we shall have to revise some of our conclusions about Eastern methods of building, at all events as far as S. Sophia is concerned. But the drawings are a splendid set, and are worth a visit to the Salon to see them. They include also a drawing of the roofs as seen from above; another of the whole of the domes and semi-domes as seen from the floor of the church; a number of beautifully drawn details; and a large restoration of the interior effect as it may have been originally. M. Prost also exhibits in the same room a town-improvement scheme for transforming the military zone of Antwerp into a zone of public gardens. The two plans, the present state, and the improvement scheme, form an interesting example of town-planning. The fortifications are removed, but the ditches which protected the bastions and curtains are retained as geometrically planned ponds in the new gardens, thus preserving a record of the outline of the fortifications before they were transformed into the sites of gardens.

The most important piece of actual modern work illustrated is to be seen in Mr. J. J. Burnet's model of the additions to the British Museum. This is a finely executed model on a pretty large scale, showing the continuous Ionic order of semi-detached columns all along the front, not quite adequately stopped at the ends by a pilaster-like pier the same width as the columns, the last of which, at each end, is shouldered up against the pilaster. Schinckel's Art Museum at Berlin has the same defect; the angle-block is not a sufficiently massive "stop" to the colonnade. The monumental British Museum railing is carried from each end of the new front, but stopped short by a large pedestal and group of sculpture, and the boundary turns inward in two curves towards the central entrance, flanked by couchant lions. All this looks very dignified and suitable for the position, but why was not this model at the Royal Academy? Englishmen are much more interested in any additions to the British Museum than any Frenchman can be; and it seems rather absurd to send a model of an important London improvement over to Paris, instead of exhibiting it where those who are most interested can see it. No French architect would have sent over to the English Academy a model of a Paris improvement unless it had been exhibited in Paris first. Another model in the Salon is that exhibited by M. Eustache of the principal entry of the "Pavillon des Beaux-Arts" at the exhibition at Rome; the French pavilion we presume. This is a triumphal arch of the old classic type; the architect seems to have remodelled his main pilasters on those of the river front of the Louvre; those in the Attic are rather heavy and ungainly in line and proportion, and the detail of the whole is too exuberant—the great fault of the French architects in modern classic work; they do not seem to realise the value of reserve and simplicity in ornament; apparently they think that every part of the structure must be decorated.

Of church architecture, as illustrated at the Salon, the less said the better, from the English point of view at all events. It is difficult to analyse exactly what it is which renders modern French Gothic, or approach to Gothic, so absolutely painful to English taste; there is a kind of hardness and cast-iron angularity about it, together with a constant trickiness of detail, which is so entirely opposed to the real spirit of Gothic architecture, that it seems all the more out of place when we meet with it in buildings which profess, in a way, to be Gothic. There is M. Brunet's church at Coulommiers, for instance, an important piece of work on the plan of the mediæval three-aisled church, which internally has a finely built vault with brick groins springing from stone imposts—good, solid work, well carried out; but it is difficult, without using words at variance with the *entente cordiale*, to express one's feeling about the design of the exterior. It is not only that every detail of it seems, to the English eye, ugly, but that there is not even unity in the ugliness; none of the parts seem to belong to each other. In spite of the fact that Gothic took its birth on French soil, and that its great cathedrals and churches are the architectural glory of France, the country has never recovered from the influence of the Renaissance and of the Empire period (which was a kind of second and peculiarly French Renaissance), and the French architectural mind and taste is now fundamentally classic. Though our own Gothic revival has run its course, the fact of having had it compelled us to study Gothic so closely as at least to understand what its spirit was; the French never had a Gothic revival (one or two correct Gothic churches, like Ste. Clotilde, were built, but that was exceptional), and they have now lost all sympathy with the style. It is a pity they do not frankly adopt classic plan and style for their modern churches, they would then no doubt do some fine things, as we see in the case of M. Guibert's memorial church; but modern French Gothic is really a terrible affliction; the examples in the present Salon only confirm the experience of past years, and increase the wonder at so curious an aberration.

The treatment of funeral monuments is generally good. M. Recoura exhibits a monument to Ernest Hébert, consisting of a kind of classic altar backed by a semicircular erection of marble ending in perpendicular fluted scrolls; the whole thing looks very well, and so completely Pagan that the cross worked in relief out of the front platform seems almost incongruous; there is also M. Gréber's "Chapelle Funéraire," to be erected in Père-Lachaise; a square marble cell with a heavily carved exterior frieze of classic scroll-work, and a domed ceiling decorated in mosaic. This is a style of work with which modern French architectural taste is in sympathy, and, as in this instance, it is nearly always well done. Of the designs for street houses one may say that they keep mainly pretty well to the type to which we are accustomed, and which is a good one for giving dignity to the streets of a capital city, and perhaps the fact that these designs so much resemble each other is not one to complain of; the result is that a certain unity and dignity of street architecture is preserved, and a better total effect is obtained in main streets than where everyone has his own separate idea in street architecture to illustrate. In fact, Paris street architecture, in the streets in which the best class of stone-fronted *maisons à loyer* are built, makes some approach to the dignity and importance of being a national style, and is perhaps the only phase of European architecture at present which can be said to be such. It is therefore worthy of closer attention than it is apt to receive from the foreign architect.

Among other things that are worth mentioning is a design by an American architect, Mr. Hood (but a pupil of a French architect), for an Hôtel de Ville for Pawtucket, U.S.A. This is an entirely new idea, a Town Hall in the form of a high building, mainly an immense tower, the various offices being reached by lifts. The tower is picturesquely designed, and if there were the condition of a restricted site to make such an arrangement necessary, the design suggests that it could be done with good architectural effect, though probably such an idea for a Town Hall would only be accepted in the United States, where high buildings have become a second nature. M. Gabriel exhibits an interesting restoration of the Hellenistic houses at Delos, where there are some remains which afford considerable basis for restoration, both in regard to plan and decorative treatment, indications of the latter being still visible on the ancient walls. M. Guéritte exhibits a large set of drawings purporting to be a restoration of the ancient pavilion and garden of La Boissière, at Paris, originally erected from the designs of an eighteenth-century architect named Le Carpentier. The place was famous in its day as a public garden, but the remains of its buildings appear to be so very slight that the restoration must be regarded as mainly imaginary. M. Hulot, whose studies of the temples at Selinonte we had the opportunity of seeing some time ago in London, exhibits two water-colour drawings intended as restorations of ancient Salinonte—one of the temples, and the main street of the town. Two rooms are filled with illustrative sketches of architectural travel, mostly water-colours, many of them very good; a complete set of large coloured drawings of the Renaissance stained glass windows in the cathedral of Auch, by M. Lacoste, is among the most important works of this class. M. Paul Guadet exhibits an interesting house in the Avenue Elisée-Reclus, being, as he describes it, an "étude de béton armé et grès flammé"; in other words, a steel-concrete house with a stoneware facing; it is one of the best attempts of the kind that we have seen, and succeeds in being really agreeable and artistic in appearance, and is therefore a rather noteworthy achievement.

On the whole, however, one must sum up with the conclusion that architecture at the Salon is still strongest in the department of drawings and restorations of ancient architecture; there is too little illustration of the actual architecture of the day, and what there is of this is often not very fascinating to the English visitor.

The R.I.B.A. and the Society of Architects.

THE coalition between the R.I.B.A. and the Society of Architects, although it cannot be expected to give unalloyed satisfaction to all concerned, is nevertheless, on the whole, an event of fair augury for the profession at large. Upon the causes of the discontent to which the amalgamation, like all compromises, is palpably subject, it would be at once futile and indelicate to expatiate. In face of the accomplished fact, it is the wisest policy to make the best of it. To this end, it is necessary to take the broadest possible view of the situation, and to give all possible weight to the blessed word solidarity. Parliament and the public, knowing nothing and caring less about the professional *nuances*, will not trouble to enquire whether the R.I.B.A., by absorbing the junior organisation, is levelling up or levelling down, strengthening its position or weakening it, and no good object would be served by any attempt either to disturb this blissful ignorance or to introduce any disruptive element into the "happy family" arrangement by which the appearance at least of a united front has become possible. In any legislative or other important appeal, it was formerly always easy for the opposition to score heavily by simply pointing to the existence of the separate organisations, and hence contending that neither the one nor the other was entitled to call itself fully representative; and there were other complications which must happily disappear with unity, and may thus form a sufficient set-off for the complications which are pretty certain to arise from it. Of course, as it had been always admitted that the Society of Architects had no *raison d'être* apart from its insistent advocacy of Registration, it may now be presumed that the guarantees on this point are strong enough to justify the belief that the measure will be pressed forward with earnest determination by the united bodies; and that appears to be the main significance of the combination. Subsidiary issues there are in plenty, but they are mostly of the sort, that may be trusted to adjust themselves automatically, and, it is to be hoped, silently.

The Dignity of Art.

AS might be anticipated, objections have been raised against the erection of a Peter Pan statue in Kensington Gardens. One gentleman who has taken part in the newspaper correspondence on the subject thinks that to erect such a statue would be to establish a dangerous precedent. He foresees as consequences a statue to Sherlock Holmes opposite Scotland Yard, another to Mr. Bernard Shaw's Mrs. Warren in the Strand, and Kensington Gardens looking like a branch of a newspaper book club. He thinks it fortunate, however, "in view of past experiments, and the poverty of the British genius for sculpture," that the honour of a public memorial is grudgingly accorded in England; yet he appears to regret that so many notable men of letters are without statues — Defoe, Swift, Sheridan, Shelley, Keats, Blake, Browning, Tennyson, Lamb, Goldsmith, Chatterton, Gibbon, and Alexander Pope being a few of the geniuses who are unrecorded in public park or square, although these men marked epochs in our literature. That Shakespeare is omitted from the enumeration is perhaps due to a shuddering reminiscence of the weird apparition in Leicester Square. The writer says that in objecting to the Peter Pan statue his plea is for "the dignity of sculpture and the dignity of literature." What is dignity? It is surely not synonymous with pomposity, nor even with grandeur, and the etymologists tell us that "dainty" is of the same origin. Sir George Frampton's Peter Pan statue is on view at the Royal Academy exhibition, where its dignity or its daintiness, or the absence of those qualities, is plain to all beholders. The question is, has the objection to mere origin any validity? Does it really matter whether or not Mr. Barrie's fame is likely to be lasting, or whether or not his fantastic play is likely to become a classic?

Surely the real point to consider is, whether the statue has in itself sufficient grace and charm as a genuine work of art, and sufficient relevancy of subject, to justify its erection in Kensington Gardens. The answer to this question, yea or nay, should be the determining factor in acceptance or rejection. If it is in itself an object of beauty and interest, and is suitable to its environment, the conditions antecedent to its inception are of trivial moment. Why, then, all this fuss about them? The gist of this note is that, these things being really of no account, attention is instantly concentrated on them, to the neglect of the real issues; and that, we fear, is characteristic of the public attitude towards art, and very specially towards architecture, which suffers cruelly from the general inability to discriminate between what are and what are not essential principles.

Flaws in the Housing Act.

IT was quite clearly foreseen that many difficulties must arise in the administration of the Housing and Town Planning Act. Two have come to light in London. In certain cases in which the Stepney Borough Council have issued closing orders under the Act, the tenants have refused to comply, and it is proposed to issue ejectment orders against them, the Act providing no penalty against either owner or occupier in case the closing order is disobeyed. But ejectment of one tenant does not prevent another from taking his place, and the local authority is therefore faced with the prospect of having to apply for a series of ejectment orders in each case until the premises are demolished, and as demolition cannot be considered until the lapse of three months after the issue of the closing order, the local authority is likely to do a brisk business in ejectment. This difficulty, however, is simple of solution, as compared with that which may arise on the order for demolition. For how is an objectionable tenement to be demolished, supposing it happens to be included in some large block of industrial dwellings, of which the other parts are not subject to condemnation? Clearly these points will have to be taken into account when the Act comes up for amendment, as apparently it must do very shortly, if, as those who have studied it most closely declare, it "bristles with difficulties."

Gigantic Contracts for British Firms.

A GRATIFYING proof of the continued supremacy of British energy, enterprise, and capacity is evident in the announcement that the contract for the new port works at Buenos Aires has been obtained by Messrs. C. H. Walker and Co., of Westminster. The work includes the reclamation of 1,000,000 square metres of land, the construction of four new docks with quays extending for a length of over 5,000 lineal metres, and the erection of warehouses covering more than 100 acres of floor-space. The cost has been calculated at about £5,500,000, and the work will take from five to seven years to perform. Messrs. Livesey, Son, and Henderson are the engineers. Messrs. Walker have had extensive experience in Argentina, and are at present engaged on improvement works for the Port of Rio de Janeiro at a cost of £4,000,000. The reinforced concrete work has been entrusted to Messrs. Edmond Coignet, Ltd., 20, Victoria Street, S.W. This contract, probably the largest ever secured in reinforced concrete work, is estimated to involve the use of 154,000 cubic metres of concrete and 19,000 tons of steel. In addition to fourteen large warehouses, twenty sheds, and eighty subways uniting the various warehouses and sheds, the contract includes a number of large grain silos. All these buildings, including walls, roofs, staircases, and loading platforms, have been designed entirely in the "Coignet" system of reinforced concrete.

The St. Paul's Bridge Scheme.

THE preamble of the Bill promoted by the Corporation of the City of London for the construction of a new bridge and the rebuilding of Southwark Bridge having been passed substantially unaltered by the Committee of the House of Commons appointed to consider it, but little more remains to be said on this much-vexed subject. The result was exactly what was to be expected. It was felt that the purely utilitarian arguments were bound to prevail when ably stated to a tribunal that only too faithfully reflects the artistic ineptitude of a nation that in this respect seems to be almost hopeless, since it so persistently sins against the light. Not only the R.I.B.A., but many other authorities of unquestioned eminence have vainly exhausted every possible means of protest against the wilful and deliberate sacrifice of an unexampled opportunity of adding to the dignity and charm of London; and the unhappy event should strengthen the demand for something in the nature of a committee of taste, which should have power to prevent the crimes against art that are being constantly perpetrated in this country in the name of expediency and economy, to the no small contempt of our more æsthetically sensitive foreign neighbours, whom we would beg to observe that in the present instance the view taken by the Corporation was not "insular," but purely parochial.

The New Burden for Builders.

CONCERNING Mr. Lloyd George's State Insurance Bill, introduced to Parliament last Thursday in a studiously restrained speech, of which the unexpected moderation of tone seems to have disarmed criticism, it is too early to attempt anything like adequate criticism in detail, as the scheme will no doubt be very considerably modified in passing through the usual Parliamentary processes, which are apt to produce, in the result, some rather surprising transformations. Contrary to what has been somewhat hastily and loosely asserted, there appears to be some sort of precedent for almost every proposition in the Bill—even that for insurance against unemployment, which has been hailed as a complete innovation; whereas similar schemes have been for some time in operation in half a dozen German cities, although in those instances the guarantee does not come from the State, but is municipal or communal. The whole Bill is very directly pertinent to the building trades, which have naturally received special attention in the Bill, not only because these trades constitute the greatest synthetic industry in the kingdom, but because it was realised that they are more subject than any other industry to seasonal fluctuations, and thus present the most formidable problems that had to be grappled with in respect to insurance against unemployment. It is on the building and engineering trades that this daring experiment is in the first instance to be applied; and the representative employers in those industries—concerning whom we should like to possess more convincing evidence that they had been sufficiently consulted before the Bill was drafted—should most certainly take counsel together, and apply all the influence they can command, not only for the just protection of their personal interests, but for the adequate safeguarding of the general welfare of the industries they represent. For it is evident that the employers have much at stake. New obligations are imposed upon them, as well as upon the workmen; but whereas the latter are assured of a handsome return on their small investment, the employers seemingly must content themselves with such comfort as they can draw from Mr. Lloyd George's assurances that "State insurance is going to make us a more buoyant and a better nation," and that, since we shall become "a happier and better nation," the consequent greater efficiency of the workers will "amply repay the employer for his incidental share of the cost of the scheme." It is a very beautiful theory; but the builder and the engineer would like to see

some measure of security for its materialisation. At present the only certainty for the employer is that, being already almost loaded to breaking strain, he is to be saddled with yet another heavy pecuniary burden.

Town Development in Germany and Austria.

THE deputation from the Birmingham Corporation which recently visited Germany and Austria to study town development in those countries have issued their report in which they express the opinion that there is no question that town development in Germany has been, in some towns, carried out in an extravagant way; but England has the advantage now of all the experience gained by Germany; and, if the economic effects of any proposals are considered with the utmost care, the town planning of suburban areas will result not only in better amenities for the neighbourhood, but in savings for ratepayers and rentpayers. Everywhere in Germany, it is stated, town planning is regarded as one of the most important functions of the town council; in some instances it has become a profession engaging the whole time of experts. Courses of lectures on the subject are given in technical schools and universities, and the literature concerning it is extensive. It is probable, however, the report states, that in our large towns we have even better results so far as the general health of the people is concerned than have been obtained in most German towns; and that the superior cleanliness and thriftiness of the German people enable them to live with less risk to health under less favourable housing conditions. The deputation were interested to note that what is conspicuously good in English methods of housing the people is appreciated in Germany, and that English conditions are being copied. The deputation realised, in the towns which were visited, that a great deal of attention was paid to manufacturing and commercial interests. Yet this is done without producing the ugly results which follow our unregulated practice of allowing works and dwellings to develop conjointly. Dealing with the æsthetic aspects of town planning, the report says:—"The fact that stoves are used in dwelling-houses and that factories are not generally allowed to be situated in residential areas results in very much less smoke and soot in German towns than in English towns having a corresponding number of manufactories and houses. This enables attention to be paid to beautifying the town in every way, and gives these towns a clean and cheerful appearance, which attracts the attention of an Englishman." The reference to stoves is a small matter in itself, but it conveys a subtle suggestion of the inveterate national prejudices which town-planners must circumvent.

The Mall Approach: Arbitration Award.

M R. HOWARD CHATFIELD, F.R.I.B.A., the sole arbitrator in the claim of the Commercial Union Assurance Company (Limited) against the London County Council for compensation in respect of the acquisition by the Council of the freehold premises, No. 55, Charing Cross, has awarded the claimants £50,930. The property is actually now being demolished in order to widen the approach from the Processional Way to Trafalgar Square. It is situated on the western side of the opening, and opposite Drummond's Bank. In order to enable the approach to be widened in time for the Coronation Procession, the claimants agreed to allow the County Council to acquire the property without first obtaining an Act of Parliament. The arbitration was, therefore, by agreement, conducted as if under the Lands Clauses Consolidation Act, 1845. The sum claimed was £84,272. Under the arbitrator's award the claimants are to receive the sum of £50,930—£12,416 more than Mr. C. W. Willoughby's valuation, and £33,342 less than the full amount claimed.

LE PETIT TRIANON, VERSAILLES.

THE small neo-classical villa, standing in the park of Versailles, known as Little Trianon, is as closely associated with the memory of Marie-Antoinette as is the adjoining palace with that of the *Grand Monarque*. Its architect, Jacques Ange Gabriel, came of a family in which the love of architecture was hereditary. His grandfather, Jacques Gabriel, one of Louis XIV.'s architects, designed the Château of Choisy, whilst his father, also named Jacques Gabriel, who was a pupil of J. H. Mansart, and a member of the Academy of Architecture, held various official appointments, including that of Inspector-general of royal buildings.

and gilded bronze. There is some fine wainscoting in the dining-room, the large drawing-room, and the boudoir.

The gardens of Little Trianon contained some charming little buildings known as the Temple of Love, built on an islet in one of the streams, the pavilion of music, the French pavilion (constructed, in 1750, by Louis XV., who used it as a summer dining-room), and the theatre. "You love flowers," said Louis XVI. to the Queen; "well, I have a bouquet to give you—it is Little Trianon."

And in truth the Queen and her friends loved, or affected to love, flowers and gardens, for had they had not all sat at

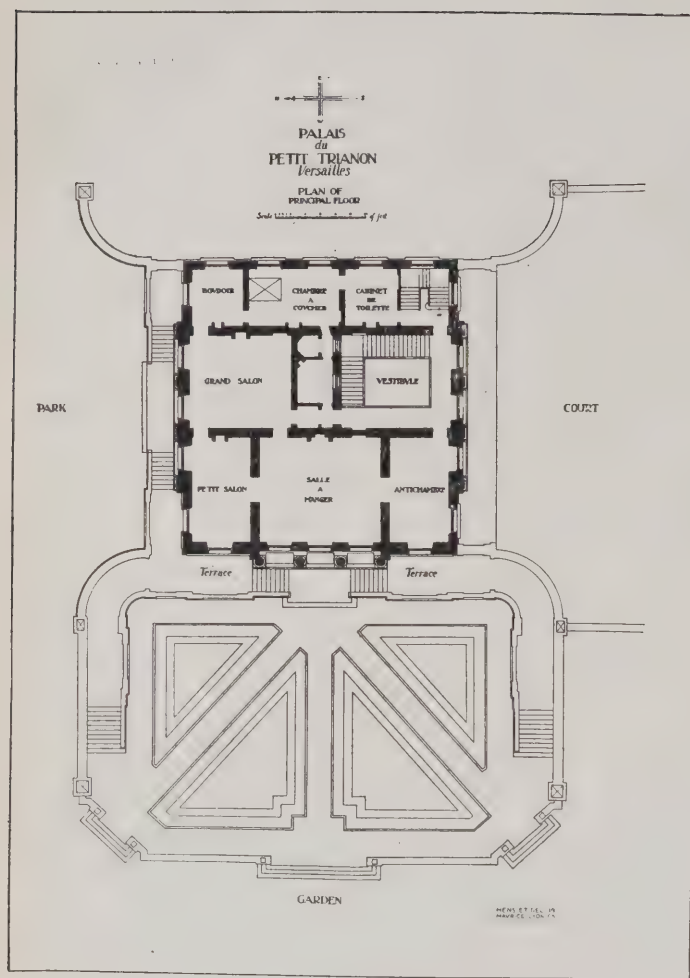


LE PETIT TRIANON, VERSAILLES: WEST FRONT.

Jacques Ange Gabriel, born at Paris in 1710, succeeded to most of the appointments held by his father, and his services as an architect were in great request during the middle of the eighteenth century. Little Trianon, although probably one of the least important of his works, is certainly one of the most pleasing. It consists of a square-built but graceful structure, containing two storeys and a basement relieved on one side by a tetrastyle loggia of the Corinthian order. The principal apartments, all of which are arranged *en suite* in accordance with the custom of the time, contain some interesting furniture of the Louis XVI. period, and include an ante-room, a dining-room, large and small drawing-rooms, a boudoir, a bedroom, and a dressing-room. The principal staircase hall is adorned with two fine examples of French art, viz., the balustrading of wrought and gilded ironwork, embellished with freely designed panels in which the Queen's initials are interlaced, and a circular shaped lantern of chased

the feet of the great Jean-Jacques Rousseau, whose precepts had brought thousands of his countrymen to worship at the shrine of nature? When Marie-Antoinette took possession of Little Trianon, the taste for cascades and statues had died out, so the Queen caused a delightful garden to be made there in what was then called the Anglo-Chinese style. "Henceforth" (said her devoted friend and attendant for twenty years, Madame Campan) "she amused herself by improving the gardens without allowing any addition to the building or any change in the furniture, which had become very shabby, and was, in 1789, in the same state as during the reign of Louis XV. Everything there, without exception, was preserved, and the charge of extravagance generally made against the Queen is the most unaccountable of all the popular errors respecting her character."

At Little Trianon and the neighbouring "hamlet"—the name given to a group of rustic houses erected in 1783—the



Queen was accustomed to spend many days with Madame Elizabeth and her friends, where, dressed in the plainest manner, they amused themselves by examining all the manufactures of the small village, seeing the cows milked, and fishing in the lake. The simple country life delighted Marie-Antoinette, and every year she felt an increased aversion to the pompous formal visits to Louis XIV.'s pretentious "hermitage" at Marly. The frequent retreats of the Queen to Trianon occasioned many of the calumnies uttered against her by those courtiers whom she refused to receive there, and when her modest "hamlet" was built, people accused her of ruining the nation by her caprices. Thus Trianon, after having given her some of her happiest days, eventually became fatal to the unfortunate Queen.

Marie-Antoinette was at Trianon when, on October 5th, 1789, the news of the arrival of the Parisian mob caused her hurried departure from the beloved spot she was destined never to see again.

SOME NOTES ON JEAN TIJOU.

IT is very remarkable that so little should be known of Jean Tijou, the great French smith who came to England soon after the Restoration, and was employed by Wren especially for such important works as St. Paul's Cathedral and Hampton Court Palace; the more so in view of the fact that he created an entirely new school of ironwork in England, and exerted an influence which was felt long after his death; indeed, if it were not for the book he published in 1693 after the fashion of his age, "Nouveau Livre de Desseins, Inventé et Dessiné par Jean Tijou," and also for the meagre entries in certain building accounts, we should have almost

nothing but his works to go by. Still, with such information as is definite, little though it be, and the piecing together of various entries, we are able to form some record of his career.

Mr. Starkie Gardner, who with much assiduity has gathered together all the available information, says that Tijou, presumably, was one of the French Protestants who fled to Holland in 1685, on the revocation of the Edict of Nantes, and came to England with, or not much later than, William and Mary.

We first hear of Tijou through his bill, entered in 1690, for six richly wrought iron vanes at Hampton Court, and a wrought iron balcony" in finely wrought leaves and scroll-work." This balcony overhung the river, and it was here, according to Ernest Law, the historian of Hampton Court, that Queen Mary and her several beauties were wont to sit and sew. This specimen of Tijou's work must thus have been continually under her notice, and as she gave all her leisure to architecture and gardening, she no doubt had opportunities of meeting Tijou personally, and he seems to have quickly gained her goodwill. The most brilliant prospects at once opened out to him, and schemes and designs for works in iron of unprecedented richness were presented to her and accepted, apparently, without intermediary or estimates. In three years only he had seemingly opened up a magnificent career, and work poured in. The garden screen, the most superb ever made, was completed and charged for in 1690, "for the circle of the Fountain Garden at Hampton Court," which had been planned at the expense of the Home Park, by Charles II., and noted by Evelyn as in progress in 1689. Another of his bills, for £1,115 12s. 6d., comprised the three rich and still perfectly preserved grates filling the archways of the east front of the palace.

His prospects appeared the more assured since he had work of no less richness to execute simultaneously for the wealthy and influential owners of Chatsworth, Burleigh, and Wimpole, while the work for St. Paul's, likely to extend over many years, was just commencing. But this great prosperity was short-lived. In December, 1694, his most gracious patron, the Queen, died, prematurely and to the grief of all, when all work was at once abandoned. It was not resumed until the destruction of Whitehall by fire, four years later, decided the King to make Hampton Court his principal residence.

Of the unexecuted works designed for the Queen, one only, the King's staircase balustrade, was required from Tijou. Among the improvements was the extension of the semi-circular fountain garden, to accommodate eight additional fountains, involving the removal of the rich garden screen, a place for which, minus the gate, was found in the Privy Gardens, then taken in hand. The gates were left as entrances from the fountain garden to the Home Park. The same alteration necessitated a railing 1,400 feet long to the east front of the palace, the cost of which, and perhaps the design as well, were got out by Talman, who estimated the weight at nearly 46 tons, and the cost at 5d. per pound. Tijou, unfortunately, took the contract, and for some unknown reason, rendered a bill for £3,675, whilst, on Talman's figures, it should only have been for £2,194 18s. 6d. With a man like Talman this was an unpardonable mistake, and probably the difference was never certified for payment.

The King died in 1702, and Anne, who did not care for Hampton Court, was deaf to appeals, even when Tijou petitioned *ad misericordiam*, and in fear of imprisonment for debt. The royal patronage, and with it that of the court, was withdrawn. Tijou removed his works from Hampton Court, and worked for St. Paul's till 1711, but here he was subject to competition, and the total, extending over 20 years, did not exceed £4,000. He retired abroad, leaving his wife a power of attorney to collect a balance due on the St. Paul's work, which was paid in 1712. The tradition extant in his

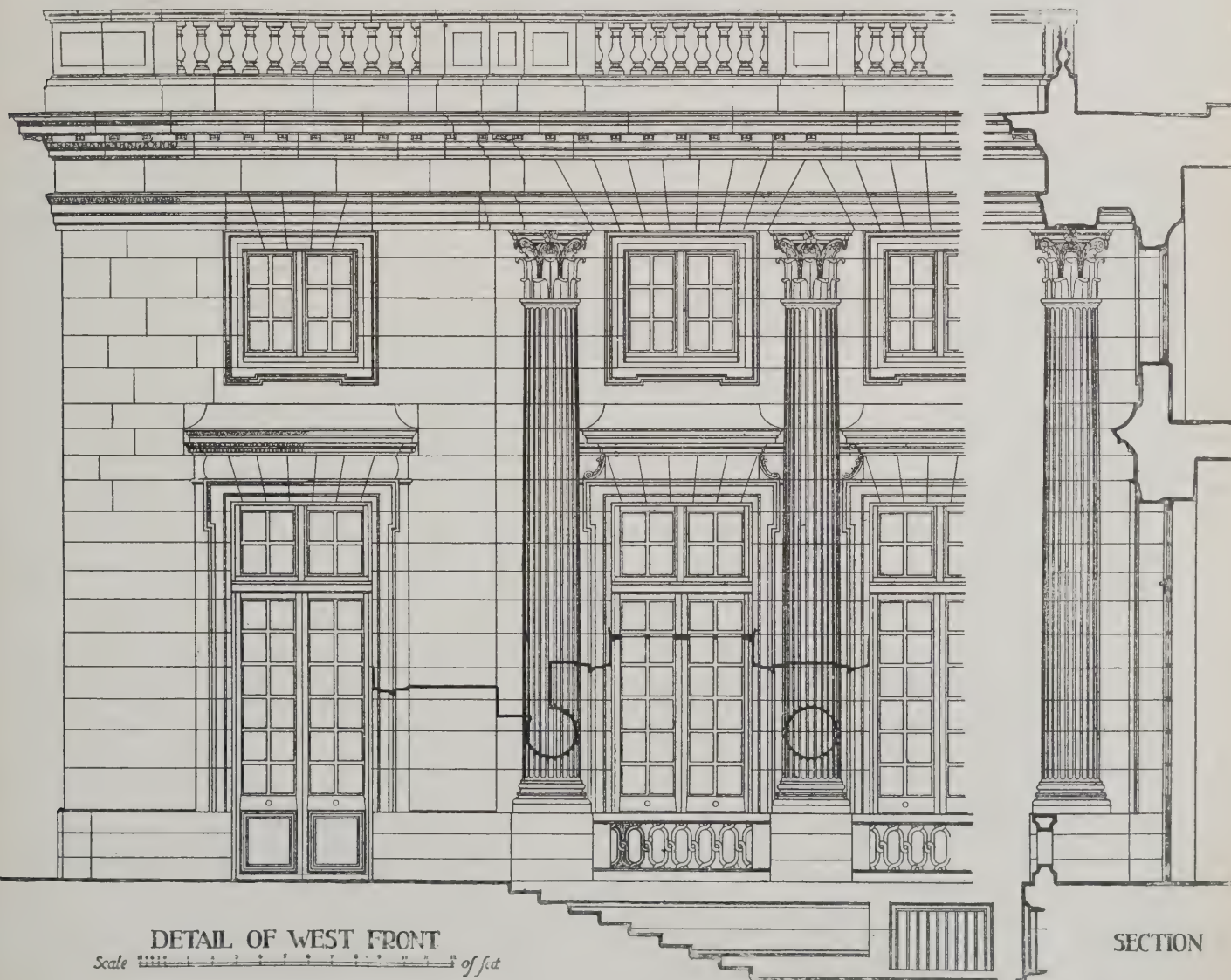
family, members of which still survive, is that he died broken-hearted, leaving two sons. This was probably in Paris, for we find Louis Fordrin adopting his designs for the St. Paul's choir gates, and republishing his copper plates with his own name as designer.

"The novelty and distinctive character of Tijou's work" (to quote Mr. Starkie Gardner) "lies in the use of embossed acanthus leaves, rosettes, masks, garlands, crowns, and other insignia, which are sometimes in such profusion as almost to conceal the forgings. No such work had previously been seen in England, nor any such rich effects. The style he adopted was based on, but unlike, the French, and he is classed as an English *maitre ornementiste* by Guilmar. His book of designs makes it clear that he was not a practical smith, but he was certainly a very practical and most artistic embosser, giving to his work expression and character never attained by any other ironworker.

"Whether, as a foreigner, Tijou's memory should be commemorated in London is for others to decide, but we must at least be fair to it. The statue on the exterior of the new Victoria and Albert Museum, selected to represent smithing, is of a person named Huntington Shaw, from Nottingham, who was, perhaps, not a smith at all, and about whom very little is known. A tablet to him, part of a larger monument, was set up in Hampton Church in 1833, and ended, when Lysons saw it, with the words, 'he was an artist in his way.' The large monument was outside and against the church wall,

and was destroyed with it in 1830, except the inscription, which was scraped and cleaned, and the lower half, left for the widow, filled up by adding the words, 'he designed and executed the ornamental ironwork at Hampton Court Palace.' A search, instituted by the Board of Education, failed to discover any reference to Shaw, and settled beyond all doubt that Tijou was alone responsible for all the important work there. There is no mention anywhere of Huntington Shaw, and Nottingham was not, and never has been a school of artistic smithing. When Tijou was at his zenith, he must have needed many assistants, and several of these I am able to trace. One, a working man, in 1707, having successfully completed, after three years' work, a garden house at Melbourne, in Derbyshire, set up a forge in Derby, and carried on an extensive trade for many years there and in the neighbouring counties. Two brothers set up in Chester, apparently some eight years after Tijou's departure, and executed almost all the fine work seen in that and the adjacent counties. Another was working in Bristol in 1710, and obtained great patronage all over that part of England and Wales. The work of each is perfectly distinctive, and easily recognised, but all agree in making a lavish use of acanthus and rosettes, in the manner of Tijou, though all equally fail when aspiring to higher flights, such as masks."

A representative example of Tijou's work—the gates to the old Clarendon Press building at Oxford—is illustrated in this issue, under "Details—Old and New."



LE PETIT TRIANON, VERSAILLES. MEASURED AND DRAWN BY MAURICE LYON.
(From the Portfolio of measured drawings of the School of Architecture, Liverpool University: Vol. 1.)

WASTE OF EFFORT IN BUILDING.

'As there is sometimes method in madness, so there is sometimes madness in method. If there is one point that stands out quite clearly from the masses of method that have been persistently dumped upon this long-suffering country by enterprising American industrial systematisers, business doctors, and the like, it is an impression of the excess of enthusiasm (or perhaps something less noble) with which a perfectly sane idea has been tortured into grotesque and futile developments, suggestive of Commodore Trunnion's elaborately scientific method of arriving too late for the wedding.

By reducing system to absurdity, or by pushing it too fast and too far, much unmerited discredit has been reflected on a general policy that is essentially sound and sane, and, in this country at all events, there are many signs of a revulsion against elaboration of system and organisation in business and industry.

Mr. Frank B. Gilbreth's book on "Motion Study: a Method for increasing the Efficiency of the Workman," which has just been published in London by Messrs. Constable and Company, Ltd., is therefore likely to meet with a somewhat mixed reception. The book, however, is, at all events, the result of genuine scientific observation and deduction, and is therefore worthy of close and respectful attention, even though one sees abundant reason for dissenting from the grandiose conclusion of the introduction as to the results of the new cult of Motion Study, "Some day an intelligent nation will awake to the fact that by scientifically studying the motions in its trades it will obtain the in-

dustrial supremacy of the world." Although the book may never have these tremendous consequences, the principles its author establishes may possibly serve to effect a certain amount of economy of effort.

The author's aim may be very briefly stated. He holds that about half the motions employed by workers are utterly wasted, and that it is possible to reduce them to standard sets of least in number, least in fatigue, yet most perfect in effect. There is a right and a wrong way of doing everything, and the worker is singularly apt to choose the wrong way, and thus waste half his time and strength. Mr. Gilbreth has drawn his observations from and applied his principles to the work of bricklaying, and all the diagrams and illustrations (forty-four in number) contained in his book refer to this craft. They show right and wrong methods of laying bricks, and have been used in teaching the standard methods to journeymen and apprentice bricklayers. The author has invented a "non-stooping scaffold," and a standard practice, which he calls the "pack-on-wall" system, for supplying the worker with materials arranged in such a way as to ensure the utmost economy of effort.

Nor has the author confined his attention to the observation and recording of motions and methods. He has made a careful study of anatomy, muscle, habits, health, mode of living, nutrition, size, skill, temperament, clothing, tools, etc., of the workers. He even has an astute note on creed. "In places," he says, "where the output of each man is not recorded separately, it is a recognised fact

that instructions of the foreman or employer will be more apt to be carried out where there is a bond of sympathy between the employees, the foreman, and the employers. A bond of sympathy between the workman and the people who are to occupy the edifice upon which they are working will also increase the output. The motions of a bricklayer working upon a wall of a church differing from his own religion are often vastly different from those that he is careful to make when the congregation to occupy it coincides with his belief." This may be very true; but what good purpose it can serve beyond suggesting the thoroughness with which the author has pursued his investigations (and incidentally setting up a certain amount of distrust of his practical-mindedness) it is hard to see. The foreman who attempted to impose any sort of religious test on his bricklayers in this country would be promptly furnished with some curious, if not indubitable, proofs of their piety.

The book, indeed, although it is intensely interesting, and is by no means destitute of practical value, is mainly philosophical and academic. It demonstrates, very convincingly some important conclusions as to waste of effort in workmanship. Of course, we all know very well, without his help, that not one workman in a hundred performs his task in the best and most economical way; but we did not quite realise—nor can we fully credit the statement even now—that strict method in motion would result in the doubling of production. You can, by taking thought, effect such radical economies in machinery; but the human mechanism



LE PETIT TRIANON: TEMPLE OF LOVE IN THE GARDENS.



FIRST-PREMIATED SCHEME FOR LAY-OUT OF GIDEA PARK, ROMFORD, ESSEX. W. GARNETT GIBSON AND REGINALD DANN, ARCHITECTS.

has—as the author very frankly admits—“variables”—of its own: also, it is controlled by a will-power that often delights in perversity.

The author fully recognises that general adoption of the principles he has elucidated will not come suddenly; and if he seems too sanguine as to the results that can be achieved by coaching apprentices and students in technical schools, that is a perfectly natural and wholly harmless excess of enthusiasm. The net result of universal instruction on his lines would be that a small percentage of the workers would, by observing the rules for economy of effort, reach the present average of output with less fatigue to themselves, without much benefit to their employers.

Motion Study: A Method for Increasing the Efficiency of the Workman. By Frank B. Gilbreth, Member of the American Society of Mechanical Engineers. With an Introduction by Robert Thurston Kent, Editor of "Industrial Engineering." London: Constable and Company, Ltd. 116 pages, 5s. 6d. net.

GIDEA PARK TOWN-PLANNING SCHEME.

The House and Cottage Exhibition at Gidea Park, Romford, which is to be opened on June 1st, was viewed privately on Thursday last by a large company of architects and others. For the purpose of the exhibition 140 houses and cottages are now either in course of erection or completely finished. They are all situated on an area of ground immediately north of Gidea Hall, those costing £500 being located in or near Reed Pond Walk, and those costing £375 being in Meadway and Risebridge Road. Thirty-seven architects took part in the competition for a town plan, and their designs are on exhibition in the ground-floor rooms of Gidea Hall. The assessors' adjudication is as follows:—First premium (£100), Messrs. Gibson and Dann, of Crawley, Sussex; second premium (£50), Mr.

Geoffrey Lucas, of Bloomsbury. Another design—that of Mr. Oswald Milne—received high commendation. At the conclusion of the luncheon, which was provided in Gidea Hall, Mr. Alderman William Thompson (chairman of the National Town Planning and Housing Council) made a few remarks. The land on which the exhibition was being held, he explained, was the property of Sir Herbert Raphael, M.P., who had given Gidea Park to the local authority, and who had placed the building land at the disposal of the exhibition committee at cost price. He had been so struck with the property he had seen there in course of erection, that he was going to have a dozen of the houses reproduced at Ruislip. What was already to be seen at Gidea Park represented an outlay of £60,000. The Great Eastern Railway Company have recently opened in close proximity to the estate a new railway

station called "Squirrel's Heath and Gidea Park," to which a special service of trains at reduced fares will be run during the exhibition.

COMPETITIONS.

Hartley University College, Southampton.

The award of the assessor (Mr. Henry T. Hare, F.R.I.B.A.) is as follows: (1) Messrs. Clyde Young and H. S. East, A.A.R.I.B.A., London, W.C.; (2) Mr. Edwin T. Cooper, F.R.I.B.A., of London; (3) Messrs. J. H. W. Hickton and H. E. Farmer, F.F.R.I.B.A., of Walsall.

Manchester Library and Art Gallery.

Professor Blomfield is now adjudicating the 223 designs submitted in the preliminary competition for the above building, to cost £250,000. Ten competitors will be selected for the final competition, each of whom will receive 100 guineas.

School at Broughty Ferry.

The design of Mr. H. J. Langlands has been selected for this new school, the estimated cost of which is £9,604. There were eight competitors.

Women's Institute, Dunfermline.

Messrs. Sydney Mitchell and Wilson, architects, of Edinburgh, the assessors in the competition for a Women's Institute proposed to be erected by the Carnegie Dunfermline Trust, at a cost of £7,500, have awarded the premiums as follows:—(1)—£20, Messrs. John Melvin and Sons, Alloa; (2)—£15, Mr. John Watson, F.R.I.B.A., Edinburgh; (3) £10, Mr. James Lindsay, A.R.I.B.A., Glasgow; and (4), Mr. Archibald Welsh, Kirkcaldy. The first premiated design, however, will not be carried out, as the design adopted by a committee of the trustees is that by Mr. Welsh.

Panel Designs for Chelsea Town Hall.

At a meeting of the Chelsea Arts Club on Thursday last, an offer made to the Chelsea Borough Council, and accepted by that body, to decorate panels in the interior of the Town Hall was finally approved. The Mayor had been able to announce that he had a definite promise of sufficient funds for the decoration of two panels—namely, £200 for each panel—and that he hoped to be able shortly to find sufficient for the decoration of two more. It is understood that no part of the cost of the scheme will fall on the rate-payers.

The complete scheme of decoration includes four panels, two on each side of the hall, 8ft. 5ins. high by 11ft. 8½ins. wide. These are to contain groups of celebrities connected with Chelsea and allegorical figures emblematic of their claims to fame—(1) in art; (2) in literature; (3) in politics, religion, science, etc.; and (4) as historical characters. Four overdoors are to be treated with a decorative design in *grisaille* enclosing a cartouche, the subject of which is to be in colour, and five panels of different sizes at the end of the hall are to contain allegorical subjects.

It is proposed that a beginning should be made by the decoration of the four panels containing groups of historical celebrities connected with Chelsea, and a competition for these panels is to be held under the auspices of the Chelsea Arts Clubs, the judges elected by the club being Mr. J. S. Sargent, Mr. P. Steer, and Mr. E. A. Rickards. If possible, an exhibition of the designs submitted will be held.

Town Planning Scheme for Montevideo.

It is announced that the Government of Uruguay intends to institute two competitions for a scheme of urban planning (streets and buildings) for Montevideo and a design for a Government building. £12,750 is to be set aside for premiums and expenses connected with the competitions.

ARCHITECTURAL ASSOCIATION DINNER.

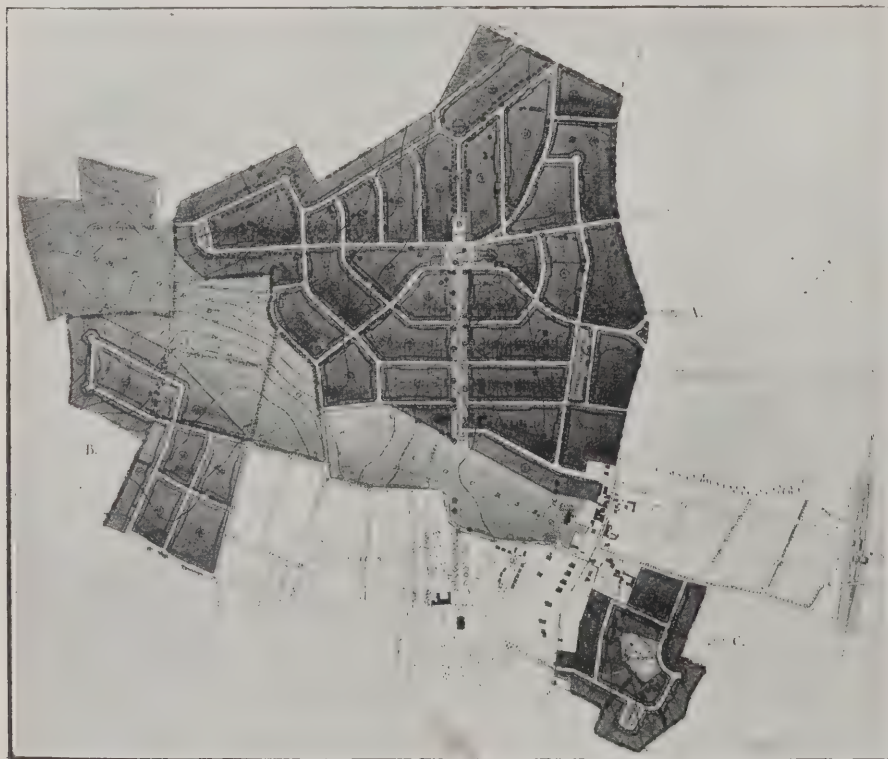
The annual dinner of the Architectural Association was held on Thursday evening last at the Trocadero Restaurant, Piccadilly Circus, many well-known architects being present. At the conclusion of the dinner, and after the usual loyal toasts, Mr. Henry T. Hare, proposing "The Architectural Association," referred to the early days of its establishment, when it occupied two or three rooms at the top of the stairs of the Institute of Architects' premises. The day school, with the establishment of which he had something to do, had been started with some trepidation; but all had turned out much more successfully than had been anticipated, and it was now the greatest architectural school in the country. In a long and interesting speech, Mr. Hare touched upon the work of the Association in many of its aspects, referring particularly to the curriculum, and doubting whether they were not attempting to teach too much in the limited space of two years. He also thought that there was a tendency to make it too easy to enter the profession.

The action of the R.I.B.A. in proposing a Bill to make education compulsory would give a great impetus to the school, which he hoped would become a national school of architecture. Mr. Hare concluded by complimenting the Association upon its official staff, observing that every man who had occupied the presidential chair knew what a devoted and single-minded secretary they had in Mr. Driver, to whose energy and initiative many past achievements were due.

Mr. Arthur Keen said the schools had their critics—some wise and some unwise—and they endeavoured to profit by the criticism offered. They had called in many sterling artists, who had given a series of lectures in the arts that co-operated with the art of architecture. The critics said the students should be better draughtsmen; he, too, would like to see figure and other forms drawn with real precision and facility. The unwise critics, however, who seemed to think the students should be taught to run before they walked, never gave a clear indication of how this was to be done. A solid basis on which to place the art of architecture was what was attempted; and the high-flighted policy of the critics did not commend itself to his judgment. Mr. Keen concluded with thanks to the staff of the schools, particularly Mr. Maule, who had a genius for organisation, and possessed the ability to infuse enthusiasm into the body of the 125 students in his charge.

Mr. Gerald Horsley then proposed the toast of "The Royal Institute of British Architects." They had, he continued, occasion to regret the indisposition that prevented Mr. Stokes from being among them, but they wished him a speedy recovery and a speedy return.

Mr. A. W. S. Cross, in the course of his reply to the toast of "The Institute," said that the advent of the "educationist" had resulted in the total disappearance of that most reprehensible being the "registrationist," who had been the cause of so much discord. If the registrationist had come forward originally as an educationist, all would have been well. Since the introduction of the word "educationist," however, perfect harmony had prevailed. Mr. Arthur Keen then proposed "The Guests," to which Mr. Leslie Vigers, Sir Alex. Stenning, and Mr. Robert Cobay replied.



SECOND-PREMIATED SCHEME FOR LAY-OUT OF GIDEA PARK, ROMFORD.
GEOFFRY LUCAS, F.R.I.B.A., AND T. D. LODGE, ARCHITECTS.



MORTON HOUSE, HATFIELD: SOUTH FRONT AFTER RESTORATION. A WINTER ROSE, ARCHITECT.

MORTON HOUSE, HATFIELD.

At this house some interesting restoration work, with reconstruction and additions, has been carried out for Mr. F. W. Speaight, under the direction of Mr. A. Winter Rose, architect. Morton House is a small but interesting example of domestic architecture, chiefly of the Queen Anne period. The house practically adjoins Old Hatfield Palace, which was built by Bishop Merton in the reign of Edward IV., and after whom it derives its name.

The entrance hall extends to the full height, and has a gallery around at first floor level. During the work of restoration an ancient oak roof, which is probably of a much earlier date than the other parts of the house, was discovered beneath the lath and plaster. Over the hall mantelpiece Morton's arms surmount an interesting plan of Hatfield, or of Bishop's Hatfield as it was formerly known, and this shows the ground plan of Morton's Palace, from which it is seen that only a small portion of the old building now exists.

The parlour, dining-room, and library open *en suite*, and are panelled throughout. The library has over its fireplace a copy of the only known painting of Bishop Morton, which is on the chancel screen of Plymtree Church. On the walls of this room are hung many of Mr. Speaight's plans for the various London improvements which he has published.

The private chapel of the house, in addition to some ancient glass, contains much old oak work.

On the west of the sunk rose garden the old stables have been converted into an open-air dining loggia, the niche in the wall on the east side having been filled in with a skilfully carved figure in stone, by Mr. Brooke Hirsch, of St. Etheldreda—the patron saint of the parish church.

BOOKS.

A Text-book on Plumbing.

This is a book intended mainly for the self-instruction of students in plumbing. As a student and teacher the author has often found that one of the difficulties which beset the path of the student plumber is, that to obtain the technical knowledge which his trade requires means a considerable expenditure in books, and that even when these books have been obtained, he finds a difficulty in picking out from them the special points appertaining to the plumbing craft. He has, therefore, aimed at producing a small and inexpensive book, within the covers of which the student of plumbing may find all the knowledge necessary for his craft.

The book appears admirably calculated to answer its purpose. Not a word is wasted in it; the information is conveyed in the most simple and direct language, and there is an ample supply of clearly drawn sections and diagrams. The book

commences with a chapter on "General Science" so far as it bears upon plumbing: water supply, drainage, and sewage disposal are treated of, and are followed by chapters on "Geometry and Setting out," "Hydraulics," and "Arithmetic and Mensuration." Further to stimulate the attention of the student, each chapter is concluded with a series of questions, in answering which the reader, by the process of self-examination in plumbing, may test the extent of his knowledge and find out his weak points.

The remarks on the subjects of sewage disposal and on the make, position, and use of water storage cisterns, are exceedingly good and practical. On the subject of sewage disposal it is significant that we find it laid down that sewage must always be regarded as a waste product, which must be removed in the most innocuous and suitable manner, "and must not be considered for one moment as a money-making concern." The older sanitarians among our readers will remember the days when golden returns were pro-



MORTON HOUSE, HATFIELD: SOUTH FRONT BEFORE RESTORATION.

mised from the utilisation of sewage on land; promises which wiser heads always regarded as illusory. In the section on taps we are glad to see that the author gives a full description and strong recommendation of Lord Kelvin's tap, the most scientific form of tap ever invented, which one of the largest water companies under the old system steadily set its face against, for reasons which were never explained. It is to be hoped that the present Water Board knows better. The Kelvin tap requires careful making and the best workmanship, but once well made, our experience is that it will far outlast any other form of tap for water under pressure. We have seen one that had been fixed for seven years without any repair, and was as tight as the day it was put in.

In regard to the question of safety-valves for boilers, the author remarks that a dead-weight safety-valve is the best, but the recommendation might have been put a little more decidedly; in our opinion it is the only form of safety-valve that is always reliable. The lever safety-valve, which is mentioned, is only a deadweight valve in another and rather less convenient form. Spring safety-valves should have been deprecated; a spring is never to be depended on unless frequently examined, and requires renewing from time to time, whereas the deadweight valve is always the same.

In speaking of the flushing cisterns for water-closets we wish the author, instead of merely mentioning the fact that in some

districts these cisterns are limited to two gallons, had entered a protest against this wrong and insanitary restriction. Many years ago the Local Government Board instituted a series of experiments which proved conclusively that a two-gallon flush not only could not be depended on to

clear the pan, but (what is even more important) that it did not give a sufficient flush to keep the drain clear; and their report summed up by entirely condemning the two-gallon cistern. How this was got over is not known, but it is evident that some strong pressure must have been brought to bear on the Board on behalf of the then existing water-companies, which cared more about their dividends than about the public health. We presume that the London Water Board, in the first instance, took over the water companies with their then existing regulations. If that is still the case, one of the next things the Water Board ought to do is to have one regulation for the whole of water London, and to abolish for ever the inadequate two-gallon flushing cistern.

One point we must object to, in the illustration of a bath-room on page 110, where a water-closet seat is shown as part of the fittings. The author says, "no bath should be fixed in a bed-room." We say, for equally cogent reasons, "no water-closet should be fixed in a bath-room." The bath-room ought to be perfectly clean and, if possible, a rather decorative room, into which no cause of unpleasantness should be admitted.

The book may be a very useful one to young architects as well as to the plumbing student; it makes an excellent text-book of the subject.

A Manual of Technical Plumbing and Sanitary Science. By S. Barlow Bennett, Consulting Sanitary Engineer. Third edition, revised and enlarged; London: B. T. Batsford, 1910. 4s. 6d.

A Guide to Town Planning.

This book, the joint preparation of a lawyer and an architect, is a short practical treatise intended for the guidance of local authorities concerned in the exercise of town-planning powers, and also to assist land owners and their agents in the preparation of town-planning schemes. It contains full information as to the legal conditions under which town-planning schemes must be prepared and carried out, with notes on the maps required by the Procedure Regulations. No less than seven maps of a district are required in order to show the successive stages of a proposed scheme, and in a separate envelope are enclosed three specimen maps as illustrations of what is wanted; No. 1 showing the land proposed to be included in the scheme; No. 2 showing the preliminary ideas of the Local Authority and to enable



MORTON HOUSE: THE PARLOUR.



MORTON HOUSE: ENTRANCE HALL, SHOWING OLD OAK ROOF AND PARTITION DISCOVERED DURING RESTORATION.
A WINTER ROSE, ARCHITECT.

the Local Government Board to decide upon the precise area to be covered by their authority to prepare a scheme; and No. 4 (the most important) intended to define in draft the considered proposals of the Local Authority. The Local Government Board, though they have not laid down any general scheme of colouring to be employed in such maps, have rightly pointed out the desirability of preserving the same system of colouring throughout all the set of maps dealing with any one scheme; a consideration which, in fact, ordinary common-sense should dictate.

The whole Town-Planning Act is printed as an appendix A, and appendix B reprints in full the Procedure Regulations of the Local Government Board anterior to application for authority to prepare and adopt a scheme. These Regulations, passed in May, 1910,, are very full and elaborate, occupying twenty pages of the book.

The whole treatise seems to be very carefully prepared, and the book may be said to be one which will be not merely useful but almost necessary to all concerned in bringing forward a town-planning scheme.

A Practical Guide in the Preparation of Town-planning Schemes. By E. G. Bentley, LL.B., and S. Pounton Taylor, A.R.I.B.A. London: G. Philip and Son; 1911. 5s.

The Late W. F. Stanley.

This small book, which is to a great extent autobiography, is an interesting memorial of a rather remarkable man, the founder of the firm of Stanley, now so universally known as the makers of drawing and surveying instruments. Stanley began life in a very small way, with hardly any capital, and owed his success to natural ability joined to unceasing exertion in making improvements in the class of articles in which he dealt. These improvements are far more numerous than most people are aware of; the one which is most popularly known and is to be seen everywhere is the form and make of T-square which he invented, the superiority of which, both in structural principle and in convenience to the user over the old make of T-square, is now obvious to every one; yet he had great difficulty in



MORTON HOUSE: GARDEN ENTRANCE, A. WINTER ROSE, ARCHITECT.



MORTON HOUSE: SUNK GARDEN FROM DINING-ROOM LOGGIA.

getting it accepted at first. Another apparently very small but really important improvement was the square section of part of the handle of the ruling-pen, which enables the holder to feel when he has the pen in the right position without looking at it; a little improvement which has saved much time to draughtsmen. Slight improvements like these become very important when they concern objects of universal use in a profession. In one point we think the Editor, who adds a biographical notice to the author's biography, is mistaken, viz., in the supposition that Stanley improved on the delicacy and finish of make of his predecessors, in the first instance at all events. The early instruments of his make were not by any means so delicate and finished-looking as those of Elliott, who held the chief place before Stanley came into the field. Probably those now made under the name of Stanley are superior in finish to the earlier ones; but we know that the latter were at first considered rather coarse in make.

Stanley made, however, much more important and elaborate improvements than the two well-known ones mentioned above; he claims, indeed, that he has reduced the weight of the theodolite and its furniture by one-half, while simplifying and im-

proving its structure. But Stanley, outside his work in his own profession, was a man of very varied talent and wide intellectual interests. He appears to have had considerable ability as a wood-carver and as painter of landscapes and portraits; he published a book on "Experimental Researches on the Motions of Fluids," and "Notes on the Nebular Theory," astronomy being a subject in which he took much interest. We have not seen either of these books, but the fact of their having been written, in mere intervals of professional work, argues a mind of no ordinary intellectual activity.

William Ford Stanley, his Life and Work. Edited by Richard Inwards, F.R.A.S. London: Crosby Lockwood and Co.; 1911. 2s. 6d.

Wessex Buildings and Scenery.

This is a short description of the history and scenery in the part of Dorsetshire around Dorchester and Weymouth. The real interest of it, from our point of view, is in the coloured drawings by Mr. Haslehurst of the old buildings and villages of the district. These are of most artistic character, and are admirably reproduced in twelve coloured prints.

*The Heart of Wessex. Pictured by Ernest Haslehurst; described by Sidney Heath. London and Glasgow: Blackie and Son; 1910. 2s.

Old English Houses of Alms.

This book is published with the idea of giving illustrations of a very interesting class of ancient buildings in England, some of which may not remain untouched for long, and drawings of them, therefore, have value as records. The examples drawn have been selected for their architectural or picturesque qualities rather than on account of any special historical interest, but a slight sketch of the history of each, as far as known, is subjoined.

The style of the drawings is somewhat hard and mechanical, but they are carefully executed as representations, and acquaintance with some of the buildings depicted enables us to testify that they have the merit of accuracy. The character of these old almshouses varies very much; some are studiously plain and unpretentious; others have a marked character of their own.

Old English Houses of Alms; a pictorial record with Architectural and Historical Notes. By Sydney Heath. London: Francis Griffiths; 1910.

The ABC of Building Construction.

This book is not very happily named, nor conspicuously well arranged. The word "glossary" is usually applied to a vocabulary explaining obscure or antiquated words, but this book is "intended as a short introduction to the science of building construction." In one respect, however, it resembles a glossary, and that it is the brevity of many of its definitions—as, "Subsoil. The earth lying between the surface soil and the rocks beneath." "Spoil. Material which is brought up during excavation." "Extrados. The upper side of an arch." "Intrados. The under side of an arch." It is difficult to see that such curt explanations can be of much value, especially when they are unaccompanied by illustrations. Occasionally, however, the description runs to a page or more in length; and scattered through the book there are a score or more of unnecessarily large scale, and thus occupying space of which better use might have been made. Much space is wasted also by poor typographical arrangement, as well as at the ends of sections; for, unlike an ordinary glossary, the book has a separate alphabetical arrangement for each of half a dozen different headings, and there

is no index to show under which section any particular word may be found. Many of the short definitions leave the enquirer but little the wiser for having consulted them, as "Dry Rot. The fungoid growth which appears on timber when not sufficiently ventilated. It causes the fibres of the wood to become powdery." And, again, what is the use of this?—"Staircase. The space which contains the stairs." A section devoted to the "designing of small buildings" is so scrappy as to promise very little utility; and while the book as a whole embodies a good deal of useful information, this would, in most instances, be the better for amplification. The author seems to hesitate between the glossary and the manual, with the result that his book is neither the one or the other.

A Glossary of Building Construction for Beginners. By Charles H. Gregory. London: J. Haslam and Co., Ltd., 15, Broad Street Place, E.C., 136 pages, 9½ins. by 6½ins.; 3s. 6d. net.

The City of London Year Book.

There must be many persons to whom this book is indispensable, since, in its well-digested mass of information touching all the multifarious interests of the great city—its municipal, commercial, and social life—it includes much that is not published elsewhere, and is not otherwise easily available, but is here presented with accuracy and discrimination, and in the forms that are best suited for ready reference and the prompt satisfaction of enquiry. There are lists of members and officers of the Corporation, of the City companies, of schools and institutions, of members of the Stock Exchange, of the Baltic, and of Lloyd's. A full account of each livery company includes the various coats-of-arms, with their occasionally quaint and often homely mottoes. The motto of the Bakers' Company, for instance, is "Praise God for All." That of the Basketmakers is "Let us Love One Another"; that of the Blacksmiths, "By Hammer and Hand all Arts Do Stand"; that of the Brewers, "In God is all Our Trust," which, like that of the Clothworkers—"My Trust is in God Alone"—has been sometimes profanely perverted into a local demand for cash down from "all others"; the Carpenters, "Honour God"; the Coopers, "Love as the Brethren"; the Glovers, "True Hearts and Warm Hands." The Grocers wax alliterative in their piety—"God Grant Grace." The Joiners' motto is "Join Loyalty and Liberty"; the Masons, "God is Our Guide." The Painters launch into Latin—"Amor et Obedientia." The Plaisterers inscribe, "Let Brotherly Love Continue"; the Plumbers, "God is all our Hope"; the Turners, "By Faith I Obteigne"; the Tylers and Bricklayers, "In God is all our Trust." A concise history of each company is given, and there are alphabetical lists of liverymen and of representative firms, and a classified list of selected trades, as well as lists of banks, public companies, city churches, schools, charities, endowments, etc.

City of London Year Book. 5s. net. (Messrs. W. H. and L. Collingridge, 148 and 149, Aldersgate Street.) 386 pages, 10ins. by 7½ins.

Building Construction in Question and Answer.

A categorical enquiry demanding a definite answer on a specific point is too often the undoing of the examination candidate who has failed to approach his subject in this spirit or by this method. To acquire the knack of studying building construction, or any other subject, on these lines, is not necessarily to become ad-

dicted to the vice of cramming; and the earnest student, who has no natural knack of picking out for himself the points that score in examinations, will be grateful for the guidance that this book affords in this special application of acquired knowledge. The book will, moreover, afford him admirable models of conciseness and clearness of expression, and in this respect it is an invaluable supplement to the ordinary text-books, which are but rarely compiled by teachers having the insight gained by Prof. Henry Adams in his long experience as teacher and examiner. The book covers a very wide field, and may in fact be regarded as a succinct treatise on the whole subject of building construction. Of special value are the five-and-twenty full-page diagrams, which are drawn with great clearness and precision, forming not only a plain exposition of constructive and other details, but admirable models of practical draughtsmanship. A copious index affords instant guidance to any point to which the student may desire to refer.

Examination Work in Building Construction. By Henry Adams, M.Inst.C.E., M.S.A., etc., Examiner in Building Construction to the Board of Education and the Society of Architects, and late Professor of Engineering at the City of London College. With numerous illustrations. Published by the Author, 60, Queen Victoria Street, E.C. 56 pages, 11ins. by 8½ins., in linen cover, price 2s. 6d. net.

Graphic Statics.

Among the lax-minded, opinion seems to be pretty evenly divided as to whether the recent developments of graphic methods have rendered the science of calculation more easy of comprehension or have added a new terror to it. Probably, for the various types of mind, "graphics" have had both these effects. The method, at any rate, may be said to have made mathematicians of many who might otherwise never have attained to that high calling, by enabling them to see geometrically what they could not perceive mentally or by means of ordinary algebraic symbols. The book under notice is an extension of a course of lectures prepared originally by the authors for students of marine and mechanical engineering and naval architecture; but the examples given include not only a lucid explanation of general principles and theories, but their application to many objects with which the mere landsman is called upon to deal, such as roof trusses, bridge trusses, and shafting. The contents of the book may be best indicated by an enumeration of the headings of the eleven chapters into which it is divided. These are as follows:—I. Graphic Arithmetic; II. Graphic Measurement of Areas; III. Forces, Concurrent, Non-concurrent, Non-parallel; IV. Parallel Forces, Couples, Centre of Gravity; V. Moments; VI., VII. The Fundamental Theory of Beams; VIII. Framed Structures: Roof Trusses, Braced Cantilevers; IX. Bridge Trusses; X. The Graphics of Friction; XI. Moment Diagrams for Shafting. In elucidating the fundamental theory of beams, the authors have followed the rotation and general methods employed in Merriman's "Mechanics of Materials." There is a luminous and comprehensive exposition, expressed in the simplest possible language, and illustrated by examples that any intelligent beginner should find no difficulty in understanding. Having mastered these principles, he will be easily able to follow the methods expounded in the two succeeding chapters, which, as already indicated, deal with roof trusses and bridge trusses. Throughout the book, the principles of applied mechanics and of strength of materials which are in-

volved have been discussed where the authors have seen any necessity for such exposition; and, to the advantage of readers who desire to intensify or develop in certain directions, there are occasional references to sources of additional information. In this and in other respects the book is likely to prove valuable to the earnest student, who will find it the happy medium between treatises that are too rudimentary to be of any real practical use to him and those that are too far advanced for the inexpert mathematician. In fact, it is, in our judgment, an excellent introduction to a subject of which, in view of the modern trend of constructional practice, an increasing number of professional men find a greater or less degree of mastery imperative and indispensable.

The Elements of Graphic Statics and of General Graphic Methods. By William Ledyard Cathcart and J. Irvin Chaffee, A.M. With 139 Illustrations. London: Constable and Company, Ltd. 312 pages, gins. by 6½ins., 12s. net.

Small Houses.

The second edition of Mr. Walter G. Ross's book has been revised and enlarged, with the addition of several further examples of the author's work. All the designs appear to be by Mr. Ross, and while it must be acknowledged that he shows considerable versatility, it is obvious that in this respect such a collection must inevitably suffer in comparison with one in which the examples are the work of various hands. The chief merit of the book is that it illustrates work that has been actually executed, full details of accommodation being given, as well as particulars of cost, which ranges from £200 to £2,000.

Some Small Houses. Illustrated with frontispiece in colour, and 90 reproductions of photographs and black-and-white drawings. By Walter Gray Ross. Second Edition, revised and enlarged. London: The Homeland Association, Ltd., 15, Bedford Street, Strand, W.C. 94 pages, 10½ins. by 7½ins.

Electrical Installation Manuals.

It is well that there should be, as there are, manuals in which the whole subject of electricity is treated, with no more than a cursory attention to details; for the general view is as essential to all concerned in this large industry as is the development of the division on which a man may require detailed information. Accordingly, Messrs. Constable are issuing a series of Installation Manuals, of which two are now before us, the one treating of motors, secondary batteries,

measuring instruments, and switchgear, and the other of arc lamps and accessory apparatus. The former is the more concise treatise, giving within small compass a surprising amount of information. The latter appeals, of course, to a larger constituency, and deals with a greater variety of practice. Both will be a boon to the respective specialists for whose benefit they have been prepared; for of both it may be said that they are models of succinct and clear statement.

Motors, Secondary Batteries, Measuring Instruments, and Switchgear. By S. Kenneth Broadfoot, A.M.Inst.E.E., 96 pages, price 1s. net. *Arc Lamps and Accessory Apparatus.* By J. H. Johnson, A.M.I.E.E. 132 pages, price 1s. 6d. net. London: Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C.

PICTURE EXHIBITIONS.

The Leicester Gallery.

At the Leicester Galleries the exhibition of water-colours of Alpine scenery by Mr. Nelson Dawson is very satisfactory to see, as his excursions into landscape in oil-painting have certainly not been happy. But in water-colour he seems to have found the medium suited to his hand, and these Alpine studies contain a great deal of excellent work. At the same gallery a small miscellaneous collection of drawings by English and Foreign Artists" contains a good deal of interest. It is curious to come across a "View on the Maas" by Rowlandson, of all people, and a design for a concert ticket by Dance, R.A.

The Dowdeswell.

At this gallery Miss Helen Donald-Smith is exhibiting a series of drawings of Venice and London, consisting entirely of architectural subjects. Many of these, especially the Venice scenes, are very effective, though the texture of her work is rather too soft and the execution not precise enough for the representation of architecture. The best works are the little bits out of back canals in Venice, rather than the main architectural monuments.

OUR PLATE.

New Wing at Madingley Hall.

This is an interesting old house, one of its claims to distinction being the fact that it was the residence of King Edward VII. when, as Prince of Wales, he was

studying at Cambridge. It has suffered a good deal from time and the unsympathetic treatment of past owners. But some years ago the property was acquired by Colonel Harding, and he has rehabilitated the whole place with great care and well-informed judgment. Among the misfortunes which the house experienced was the demolition of a considerable portion of the North wing; the latest improvement carried out by the owner is the reinstatement of a large part of this mutilation. The length of the new wing was made some feet less than that of the old, in order to preserve a due proportion with the entrance front. There was not sufficient record of what the old wing was like, so the new work was designed to harmonize with the house generally. It was, however, certain that there was a turret at each end of the North front, and accordingly the new turret was built to accord with that which was left at its farther end.

The new bricks and tiles were selected with a view to obtaining a general tone as near as possible like that of the existing work, with the result that there is no marked difference between the two.

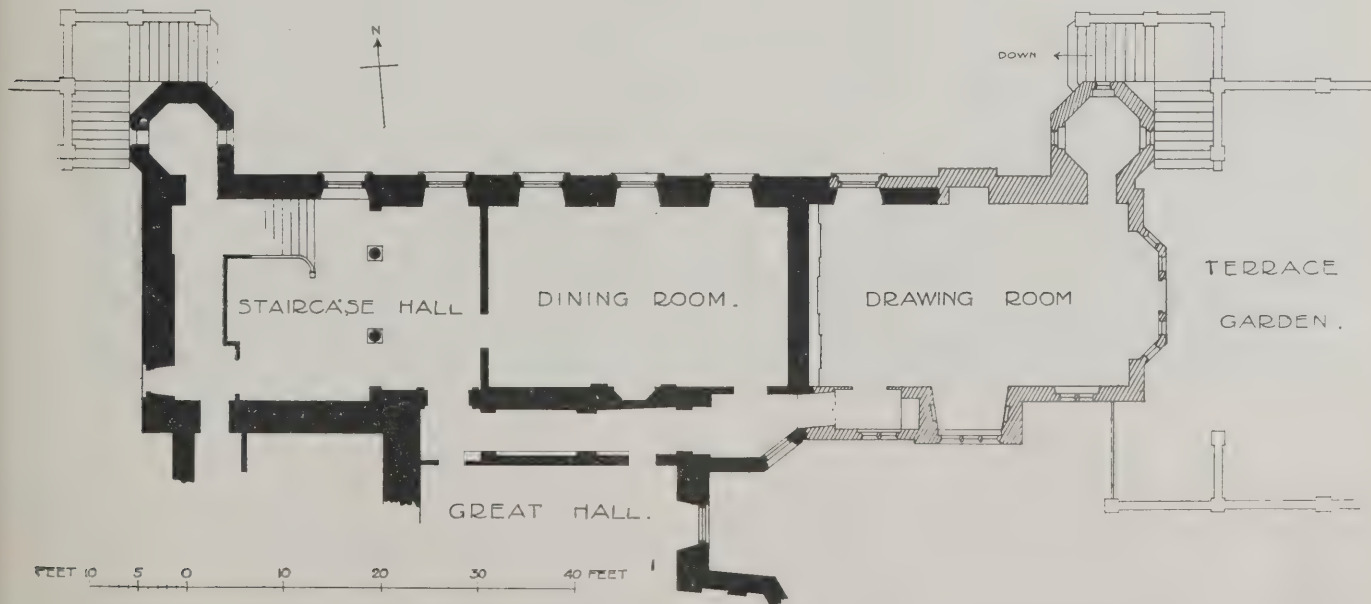
The architects were Messrs. Gotch and Saunders of Kettering, and the work was carried out by Mr. W. Sindall of Cambridge.

The drawing reproduced is included in the present exhibition at the Royal Academy.

DETAILS—OLD AND NEW.—VII.

Gates to Old Clarendon Press, Oxford.

It is not definitely known that these gates are the work of Jean Tijou, but they have all the characteristics of his peculiar and un-English style. The similarity of motif between the lower panels here and his gates at Hampton Court affords strong presumptive evidence of his influence or execution. There is considerably less straight bar work than is usual in purely English gates, and a profusion of hammered leaves (which are all double, showing on both sides) always present in Tijou's work. It is a practical point that these hammered leaves are absent from the lower panels, where they would be subject to rough usage. The Clarendon Press building was designed by Vanbrugh and was completed in 1724, having been erected partly from the profits of Lord Clarendon's "History of the Rebellion."



NEW WING, MADINGLEY HALL, CAMBRIDGESHIRE. GOTCH AND SAUNDERS, ARCHITECTS.

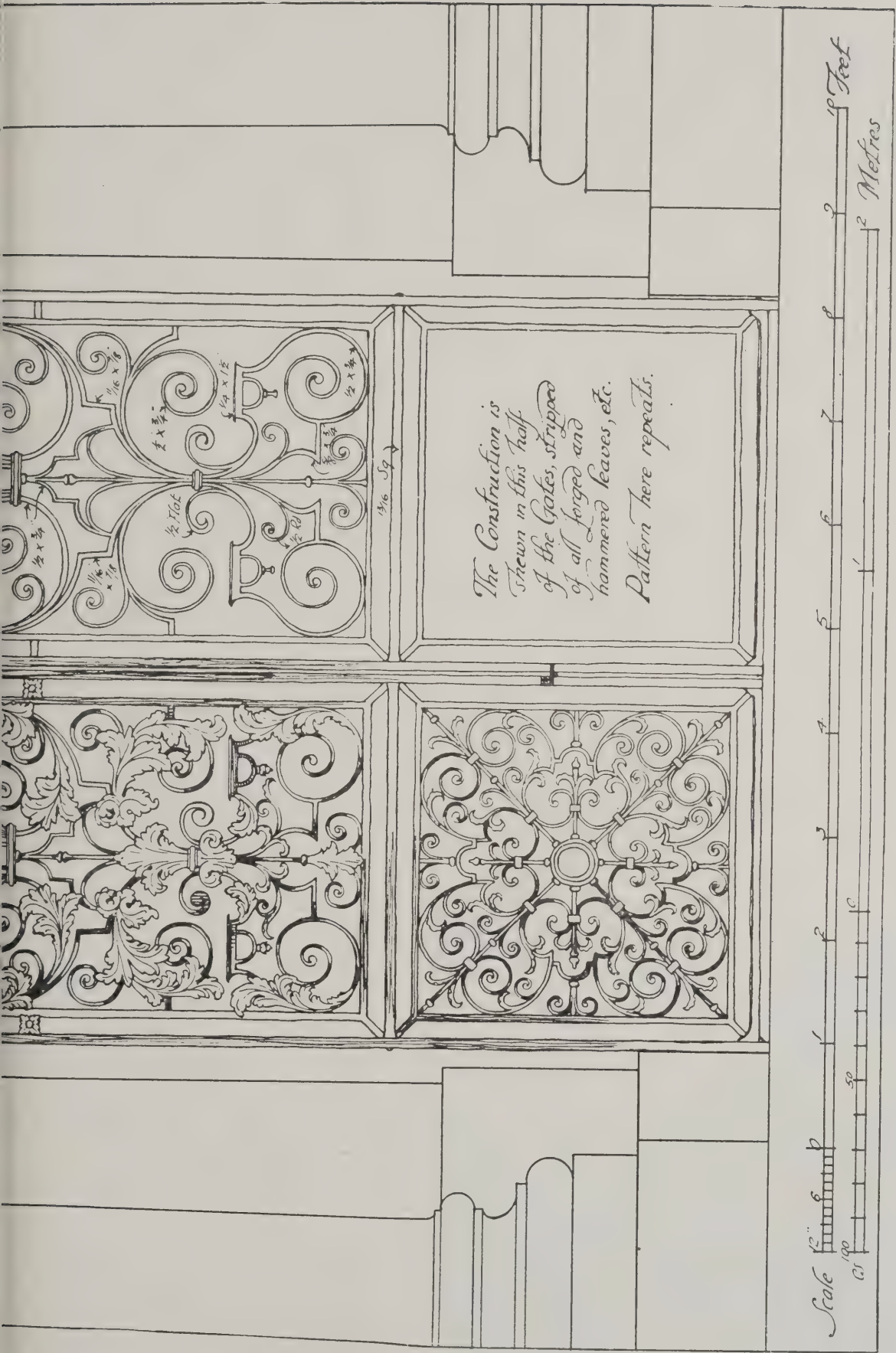


DETAIL OF WROUGHT-IRON SCROLL AND LEAF-WORK IN GATE TO OLD CLARENDON PRESS, OXFORD.



PANEL IN LOWER PART OF GATE TO THE OLD CLAREDON PRESS, OXFORD.





*The Construction is
Shewn in this half
of the Gates, stripped
of all forged and
hammered leaves, etc.
Pattern here repeats.*

WROUGHT-IRON GATES TO OLD CLARENDON PRESS, OXFORD, BY JEAN TILLOU.
DRAWN BY EDWIN GUNN, A.R.I.B.A.

FIRE PREVENTION NOTES.

Fire-resisting Windows.

A striking proof of the value of fire-resisting glass was afforded in the fire which occurred at the works of Messrs. Pilkington Bros., St. Helens, on April 10th. A large shed used for the storage of straw caught fire. The straw shed was connected by means of a covered-in wooden bridge with an extensive building known as the Siberia Warehouse, in which large quantities of glass are stored. The bridge was soon ablaze, and a strong south-western gale carried the flames towards the warehouse, with the result that all the windows facing it became actually red-hot—a condition that would of course be utterly impossible with ordinary glazing, which would have promptly shivered, leaving the warehouse to share the fate of the straw-shed. The windows of the warehouse, however, were glazed with Pilkington's fireproof wired glass, which remained staunch under the most trying conditions, and saved the building. The flames were actually beaten against the glass, and, if this had given way, as ordinary glass would have done at the first onset, they would have penetrated and destroyed the warehouse. The accompanying illustration, taken after the fire, shows, from the effects on the straw-shed, how fierce must have been the flames; and the condition of the wired glass in the windows of the adjacent warehouse shows how effectively it withstood them.

Preventing Fire from Without.

The efficiency of fire-resisting glass was demonstrated with equal force by the behaviour of the skylights. The roof of the building was constructed of slates, with wired glass skylights 117ft. by 14ft., glazed with 26in. by 14in. panes. The intense heat caused the slated portion of the roof to fall in; but the wired glass largely remained in place, with little damage beyond cracking, and slight sagging. This case illustrates very forcibly the first-class importance of making buildings safe against the penetration of fire from without, and at the same time indicates a very efficient means of accomplishing this object. This de-

monstration of the behaviour of wired glass in an actual fire is an apt corollary to the experimental test some years ago, in which Pilkington's wire glass skylights emerged intact after thirty minutes' exposure from fire that reached a temperature of 1,500 degrees Fahr.

London Fire Brigade.

An official return recently issued states that the present strength of the London Fire Brigade is 1,365 officers and men. This total includes 40 men under instruction, 12 pilots, and 190 coachmen. The Brigade now possesses 82 land fire stations and three river stations, 74 horsed steam fire engines, seven steam and four petrol motor fire engines, five motor tenders, ten motor escape vans, four motor-cars, 56 miles of hose, two fire floats, two steam tugs, 116 escapes, 94 horsed escape vans, and 315 horses. Of 3,208 fires which occurred in the London County Council area during 1910, 1,130 are attributed to carelessness, 240 to structural defects, 128 to electric lighting, 195 to gas lighting, 63 to oil lighting, and 684 to heating; 365 were caused in the exercise of business or industry, and five by arson. In 398 cases the causes could not be traced. Children playing with fire or matches caused 212 fires, and lights thrown down were responsible for 602 outbreaks. Defective electric circuits caused 138 fires, escapes of gas 101, and accidents with oil lamps 108. "Smoking tobacco" resulted in 21 fires, and petrol caused 59 outbreaks. One fire was caused by a van overturning on to a workman's fire, and another by workmen's tools coming in contact with an electric cable. Lightning caused four fires, and sparks from locomotives 18.

Heath Fires.

The extensive heath and forest fires reported during last month are only interesting because the enthusiasm for fire-prevention leaves no aspect of the question unconsidered, and because such fires, while sufficiently deplorable in themselves, are marring for a time the landscape of the affected area, and, in the case of forests, also destroying timber that is not only picturesque but also commercially valuable. Extensive heath fires broke out almost simultaneously at

three points on the line of hills between Folkestone and Beachborough. The first outbreak occurred near Beachborough Hall, where a tract about a thousand feet long and 450ft. wide was involved, and at one time it was feared that the stables of the mansion must become involved. At Newington, the fire, fed by a stiff breeze, rapidly extended over a mile and a quarter of dry heath. The third fire broke out on the hill adjoining the Folkestone Waterworks, near Cæsar's Camp, and, but for the efforts of troops from Shorncliffe Camp, would probably have reached some groups of buildings. In a thickly populated country such as ours, this, of course, is always a serious menace from heath fires, and systematic, not to say scientific means of providing against it have yet to be devised. Disciplined troops, armed with more or less effective implements, are not always available. Where large tracts of heath are bordered by buildings, it would be advisable to devise some means of isolation, even at the possible expense of picturesqueness. A stream over which mere heath flames could not leap would not involve any sacrifice of beauty; but in times of drought, when heath fires are most likely to occur, the ditch itself would probably be dry. A sufficient clearance of brushwood might serve the purpose; and the expense and trouble of keeping it clear would probably be worth while, considering the issues at stake.

Gorse Fires.

While the heathwood was blazing at Folkestone, nearly twenty acres of gorse on Hayes Common were being destroyed by a fire that is thought to have been started by picnickers. Hayes Common would therefore appear to be in serious peril of the fate that has overtaken most of the common lands that are within easy reach of the London ruraliser; for the gorse that was the glory of suburban commons, and before which Linnaeus is said to have fallen on his knees in an ecstasy of delight and worship, is becoming very scarce, in consequence either of the mischief of small boys or the carelessness of smokers. In the case of commons like that of Clapham, which are hemmed in by houses, the disappearance of the gorse is not without its compensations. A raging gorse fire in a high wind, with numberless more or less inefficiently protected buildings within easy reach of the sparks, is a risk against which mere picturesqueness is but a sorry set-off. Gorse is peculiarly inflammable, and at certain seasons is as dry as tinder, with an appearance that almost invites the mischievous urchin to try the effect of a lighted match.

Firs and Heather.

Destructive fires have also occurred in Meikleour Woods, Perthshire, the property of Lord Lansdowne, and in Carsie Woods, near Blairgowrie. The fire started in Carsie Woods, and the wind carried it rapidly eastwards through Meikleour Woods, destroying more than 100 acres of almost fullgrown Scots firs, besides a large plantation of young trees. It is said, probably without exaggeration, that thousands of trees were destroyed, and hundreds of acres of heather were reduced to ashes. The heather and moss, after a month's freedom from rain, were highly combustible, and the flames from them are said to have leapt to a height of 30 ft. How to prevent or suppress such fires are problems that seem almost impossible of solution; but it is therefore all the more imperative to provide that the buildings within reach of them either by actual contact with the flames or by means of wind-borne sparks and lighted fragments, should be efficiently protected. Fortunately, roofs, windows, and skylights, can be rendered proof at least against sparks and débris.



Part of the roof of the straw-shed at Messrs. Pilkington's, St. Helens, Lancs., which was destroyed by fire. The wired-glass lights mostly remain in position, although the slates have fallen.

FIRE-RESISTING GLASS.

ENQUIRIES ANSWERED.

Temporary Screen Wall.

Referring to the reply to an enquiry under this heading in our issue for April 12th, Mr. J. H. Norris, borough surveyor, Godalming, writes: "The Local Government by-laws also contain provisions for preventing buildings which have been erected in accordance with the by-laws from being altered in such a way that, if at first so constructed, they would have contravened the by-laws. I suggest that the local authority concerned should be asked to sanction the temporary screen for a limited period, and have no doubt they would feel justified in acceding to any such reasonable proposal."

Testing Water Main.

ASSISTANT (Kent) writes:—"In hydraulically testing a considerable length of cast-iron water main (in this case 3 in. in diameter and some two miles in length) by means of a pressure pump tapped into the main at the highest point, is there any means of locating a leak by observing the behaviour of the needle of the pressure gauge? The main is covered, so that any leak cannot be seen by inspecting the pipes themselves. The line of pipes is not laid on a continuous gradient, but is undulating, going down into a valley and up the other side of the hill, with, of course, an air valve at the highest point. Could you recommend a good modern text-book on the kindred subjects of water supply and sanitation for villages and small towns?"

—The relative levels of the various points should have been given, but the omission does not make much difference. There is no way of locating a leak by the behaviour of the pressure gauge at the end, but it is possible, if the neighbourhood is quiet and the pressure is great, to hear a leak, by pricking through the ground with an iron rod of small diameter to touch the pipe and putting the ear to it. The lowering of the pressure gauge after the pipe is full and all valves shut would indicate the fact of the leak but would not locate it. There are two or three small books that might be found useful, such as Slagg's "Water Engineering" (Lockwood. 7s. 6d.), Savage's "Sewerage and Sewage Disposal of Small Towns." 2s. 6d., Wood's "Practical Sanitary Engineering" (Griffin. 8s. 6d.), Greenwell and Currie's "Rural Water Supply" (Lockwood. 5s.)

HENRY ADAMS.

Withholding Final Certificate.

BUILDER (Birmingham) writes:—"A builder signs a contract, the architect appointing himself arbitrator. During the progress of the work a new floor is put in, for which the timber sizes are given and price agreed, but no detail of construction is made by the architect, who visits the work from day to day and makes no complaint as to the method of construction. When the floor is practically finished, a representative of the freeholder raises objections to the framing, but states that if it suits his superior he will say nothing further. Shortly before the builder is ready for the final certificate the freeholder still objects, whereupon the architect calls on the builder to satisfy the freeholder, and refuses the final certificate. The architect would be satisfied, but the freeholder will not say what would remedy his objection or give him satisfaction. The architect declines to withdraw as arbitrator, and holds an amount in hand until the matter is settled. How

can a settlement be effected, and could the arbitrator be removed?"

—The crucial question in the above query appears to be whether the objection to the way the floor had been framed was in fact a sound objection. If it were a sound objection, the builder, being responsible for the method of construction adopted, must accept the consequences and rectify the construction. If it were not a sound objection, the builder should have at once demanded that the objection be either justified or withdrawn, and should have refused to proceed with the work to the floor until the matter was settled, unless the proprietor expressly agreed to hold him blameless for so doing. The fact that a third party came to inspect the work and objected to it should have been sufficient evidence for the builder that other persons were interested besides the proprietor. The question of satisfying the freeholder, however, apart from the question of whether or not the method of construction was sound, is not one for the builder, but for the proprietor. To bring the question to an issue, two courses appear to be open to the builder:—

—(a) To go and see the freeholder, without prejudice, and find out what will satisfy him. This might be the cheapest way out of the difficulty even though no sound objection can be made to the method of framing.

—(b) Enter an action calling upon the proprietor and architect to show cause why the final certificate should not be granted.

A.G.W.

Books on Architecture and Building.

INQUISITIVE writes:—"Please answer the following questions:—(1) What is the best modern architectural dictionary? (2) In what respect does Molesworth's architectural pocket book differ from the pocket book of engineering formulæ? (3) What books are to be recommended on architecture, and architectural construction?"

—(1) The best modern architectural dictionary is that by Russell Sturgis, in three volumes, price £3 15s. (published by Macmillan in New York). Among the smaller works are "Dictionary of Architectural Terms," by John Weale, (Batsford. 5s. net.), and "Handbook of Technical Terms in Architecture and Building." (Batsford. 8s. post free).

—(2) Presumably our correspondent means Hurst's "Architects' Pocket Book," (the companion to Molesworth's), as the only one by Molesworth is the "Engineers' Hand Book." Hurst's book gives formulæ and tables for calculating the strength of materials in girders, columns, and roofs, etc., and deals with sanitary engineering and a variety of other subjects germane to the practice of building. Memoranda on the various building trades and tables of weights and measures are also included.

—(3) It is impossible to define the best books on architecture, but in each respective category the following may be recommended:—(a) "A History of Architecture," by Banister Fletcher (Batsford. 21s. net.), and (b) "Building Construction," by Beresford Pite, F. T. Baggallay, H. D. Searles-Wood, and E. Sprague (Longmans, Green and Co. 18s.).

Sound-proof Partition.

W.J.M. (ALDRSHOT) writes:—"I desire to erect a sound-proof partition, which should not be more than from 10 in. to 12 in. thick. The partition is cut of a portion of a skating rink, and it is at pre-

sent suggested to have two 4½ in. brick walls and to ram sawdust in between."

—The proposal outlined should be reasonably successful, though if the partition is to be built on the floor, and the latter passes uninterrupted from the rink to the portion to be shut off and rendered sound-proof, some amount of noise may be conducted by this. Queriest should read the account which appeared in this Journal for April 12th, describing the means adopted for sound-proofing the class-rooms at the new Royal Academy of Music, and which should provide useful suggestions as to general principles. G.

NEW HEADQUARTERS OF THE
Y.M.C.A.

The great building of the Central Y.M.C.A., in Tottenham Court Road and Great Russell Street, is approaching completion, and is to be opened at the end of September. At present, screened as it is by hoardings, its architectural merits are not to be appreciated, but when finished, with its tower 143 ft. high visible from Oxford Street, the new headquarters will be revealed as a striking addition to London. Mr. Rowland Plumbe, F.R.I.B.A., the architect, has maintained in the design a general Renaissance feeling in combination with a practical regard for the serviceableness of the institution. The architectural difficulties have been considerable in providing for the diverse requirements of the 10,000 members—a swimming bath, gymnasium, and bowling alley in the basement; on the ground level a large hall to seat 900 and a small one for 300, and a reading-room on the floor above, as well as rooms for games and social purposes, and a reception lounge with a great inglenook, where the members will foregather and derive from it something of the home sentiment which the Association particularly desires to cultivate. The second floor is designed as a technical college with a lecture-room, laboratory, reference library, and various offices and rooms, among which is a dark room for the use of photographers. On the upper floors are over 200 bed-rooms, 60 per cent. of which are specially arranged for working boys. The roof accommodates a miniature rifle range very comfortably, and the tower will contain bed-rooms. A great deal of space has been devoted to the admission of air and light, and on looking down from the roof one sees that many more rooms might have been added if less importance had been attached to illumination and free ventilation. Being of reinforced concrete construction the building may be regarded as practically fireproof. It is named the George Williams Memorial, and will cost about £200,000, of which more than half has been subscribed.

Ancient Art at Earl's Court.

An International Ancient Art Exhibition, which will be opened on May 19th at Earl's Court, and will remain open until October, will comprise pictures, sculpture, bronzes, art furniture of every period, art fabrics, costumes, tapestries, etc.

Royal Photographic Society's Exhibition.

The fifty-sixth annual exhibition of the Royal Photographic Society of Great Britain opened yesterday, at Prince's Skating Club, Knightsbridge. A feature is a loan collection of photographs by her Majesty Queen Alexandra. There will be a lantern lecture every evening at 8.30.

TRADE AND CRAFT.

"Stocal" Patent Wall Tiling.

In the notice of Stand 12, Row F, at the Building Trades' Exhibition (p. 483 of last week's Journal), there was a very brief reference to the "Stocal" patent wall tiling, which merits further description. It is obviously beautiful, and extreme durability is claimed for it, as it cannot crack, craze, become discoloured, or come away from the wall, there being a perfect dovetail grip all round each tile. It is also stated to be unaffected by percolation of underground damp, or outside exposure to frost and weather. It is made in all colours, tints, and tones, as well as in white, ivory, or salt-glaze, and with either glossy or matt surface, and it is specially recommended for its suitability as a facing for reinforced concrete. Mr. F. H. Brook, the exhibitor of the "Stocal" tiles, showed also the well-known "Florite" opal glass tiles, which have been extensively used throughout the kingdom and abroad in hospitals, baths, railways, etc. Its distinguishing qualities are solidity and durability, and, being without pliable backing of any kind, it is unaffected by temperature or dampness. Mr. F. H. Brook's address is 11, Queen Victoria Street, E.C.

SOCIETIES AND INSTITUTIONS.

Surveyors' Institution.

The arrangements for the visit of the Surveyors' Institution to Liverpool, on May 25th and 26th, have been announced. The headquarters during the meeting will be at the Adelphi Hotel, where thirty rooms have been reserved for members. On Thursday, May 25th, the Lord Mayor of Liverpool will receive the members at 10 a.m. For the afternoon of the same day the following excursions are arranged: Cruise on the River Mersey, to view the docks and shipping; visit to Liverpool Cathedral, Queen's Drive, and Calderstones Park; visit to the dock offices, tobacco warehouse, and grain silo. In the evening the dinner will be held at the Adelphi Hotel. On the second day, the excursions will be to Port Sunlight and the Cheshire County Council Small Holdings at Ledsham, and to Chester, Eaton Hall, and the River Dee. There will, of course, be papers and discussions on subjects of interest to the profession.

The Concrete Institute.

A visit of the members of the Concrete Institute to the International Building Trades Exhibition took place on May 1st by invitation of Mr. H. Greville Montgomery, the organiser of the Exhibition. At the conclusion of the visit the first of a series of free educational lectures on the subject of reinforced concrete was delivered by Mr. R. W. Vawdrey, B.A., Assoc. M. Inst. C.E. The President of the Concrete Institute, Sir Henry Tanner, I.S.O., F.R.I.B.A., presided. About 100 students of the Institute and others were present, and the remaining lectures of the course are being delivered on Wednesdays at 5.45 p.m. in the lecture hall of the Concrete Institute at Denison House, 206 Vauxhall Bridge Road, S.W. Tickets of admission may be obtained free on application to the Secretary, Mr. H. Kempton Dyson.

The annual general meeting of the Institute will take place to-morrow, May 11th, at 8 p.m. at Denison House, Westminster.

The two days' summer meeting in connection with which there will be a conver-

sazione and the first annual dinner of the Concrete Institute will be held in London on June 7th and 8th. Papers will be read in the mornings, visits to inspect structures of reinforced concrete in course of erection will take place in the afternoons, and the dinner and conversazione will take place in the evenings of the days mentioned.

INTERNATIONAL HYGIENE EXHIBITION.

Preparations for the opening of the International Hygiene Exhibition at Dresden on May 6 by the King of Saxony are now complete. The British section will be opened early in June. The exhibition has its origin in a conference of hygienists which was held at Dresden eight years ago, and it is proposed to illustrate the modern achievements of hygiene in every direction. It is divided into "popular," scientific, industrial, historical, and sports department. Thirteen countries, including all the Great Powers, will be represented at the exhibition. The Board of Trade decided that its exhibition branch could not organise the British section in view of the sections which had been arranged at Brussels in 1910 and at Rome and Turin this year, but an influential Committee was formed and appealed for £10,000 for the purpose of carrying out the work. Of this sum £7,000 has been already received. Though many British firms will be represented in the industrial section of the exhibition, it is proposed that the official British section shall be exclusively scientific. It will include a pictorial reproduction of English hospital arrangements and organisation, models and other objects depicting the disposal of sewage and refuse, especially in connection with certain trades; apparatus and materials utilised for the protection of workmen in dangerous trades; modern achievements with regard to the housing of the working-classes and town-planning; exhibits depicting the gradual development of healthy dwellings from the insanitary hovels of 100 years ago; and exhibits illustrating the hygiene of traffic. The other sections will also cover a very wide range, and include exhibits illustrating houses and their furnishings.

FEDERATION NEWS.

Yorkshire Federation.

The monthly meeting of the Executive Council of the Yorkshire Federation was held at the Builders' Exchange, Northumberland Street, Huddersfield, on April 20th. Mr. A. J. Forsdike, president, occupied the chair, and was supported by 37 delegates from the Federated Associations.

A letter was read from the National Secretary stating that in view of the replies by the Postmaster General to enquiries addressed by various bodies with respect to telephone service, it was evident that nothing further could be done at the moment. It is the Postmaster-General's desire that telephone service should be supplied to all subscribers at rates fixed at the lowest point consistent with sound management of the undertaking, and that they should be equitable as between large and small users.

The treasurer's report was received, and the accounts were approved.

A draft reply to the Board of Trade to specific inquiries as to apprentices in the building trade, having been supplied to each member, was taken as read, and the draft letter as amended was approved, and instructions were given for it to be forwarded to the Board of Trade.

Letters were read from the town clerks of Bridgewater, Huddersfield, Leeds, and Wakefield, with reference to the suggestion of the Federation that be co-opted on town planning committees. The Federation resolved to approach the architectural societies in the respective districts and enlist their co-operation and sympathy with a view to architects and building trade employers being suitably represented as consultative members on town planning committees.

The Federation gave careful consideration to the requests which are being made by trade unionists that the Labour Exchanges should be placed at their disposal for meetings of members, attendance of officials, custody of papers, etc. It was resolved to inform the Board of Trade that the Federation is strongly of opinion that it is absolutely necessary that Labour Exchanges should be entirely dis-associated from any partiality to any class, and that no distinction should be made between trade unionists and non-unionists. It is further convinced that if the claims of the trade unions are recognised and the facilities afforded, that these would be inimical to the best interests of the unions themselves, the preferential consideration and class distinction contrary to public policy, and likely to prejudice seriously the recognition and use of the Labour Exchanges by employers of labour. The secretary was instructed to forward a copy of the resolution to the National Federation and Northern Centre.

Members were reminded that the provisions of Section 105 (1) (Notification of Accidents) of the Factory and Workshops Act, 1901, requires "notice of accidents to be given to H.M. Factory Inspector for the district when there occurs on certain premises or buildings any accident which causes to a person employed therein such injury as to prevent him on any one of the three working days next after the occurrence of the accident from being employed for five hours on his ordinary work. Every such accident shall also be entered in a register kept for the purpose in the premises (i.e.) the contractor's office." This, with other provisions of the Factory Act relating to the reporting of accidents and the examination of steam boilers apply:—(1) To premises on which machinery worked by mechanical power is temporarily used in the construction of a building or in structural work in connection with a building, and (2) to buildings over 30 ft. in height, which are being constructed or repaired by means of scaffolding, whether machinery be used or not, and the person using any such machinery, or employing the persons engaged in the construction or repairs, is responsible (under penalty) for seeing that the provisions referred to are duly observed. Members are reminded that this provision for the notification of accidents to factory inspectors is quite distinct and apart from any connection with Workmen's Compensation injuries, and the returns made thereunder by insurance companies on behalf of employers.

The question of becoming affiliated with the International Federation of Building and Public Works Contractors, referred from the National Federation to the county federations for observations, was carefully considered. It was reported that the third international congress will take place at Rome from the 10th to 20th October next. The Federation expressed the desirability of becoming members in order that they may obtain the papers issued by the International Federation; and the question of representation at the various conferences was left to be dealt with as occasions arise.

A letter was read from the National Secretary containing his report to the National Administrative Committee with respect to the income and expenditure and reserve fund of the Federation, which was recommended by the Administrative Committee to the Federations for adoption. The matter was referred to the Finance and Emergency Committee for consideration and report.

Extracts from the National Secretary's report, Feb. 28th, 1911, were read, together with minutes of a meeting of the National Conciliation Board held March 28th.

An invitation was reported from the National Conference on the "Prevention of Destitution," to be held in London on May 30th and 31st, and June 1st and 2nd. The subjects to be discussed include workmen's compensation insurance, malingering, unemployment, juvenile employment, etc. The Federation secretary was requested to represent the Federation at the Conference.

The secretary presented a report of the decision in the Court of Appeal in the case of Freeman and Sons v. Chester R.D.C.

Attention was also drawn to the decision of the House of Lords in a case where employers sought to be indemnified by two workmen for compensation paid to a boy who had been injured through the negligence of these two men under whom he was working. The defence was a denial of liability, on the ground that the words "person other than the employer" were not intended to apply to employees of the employer liable for compensation, that is to say, to fellow-workmen of the injured person. The case was dismissed without any arguments being heard on the other side. The Lord Chancellor remarked that a man was not to be responsible for his negligence would mean a free hand to everyone who neglected his duty towards his fellow servant. Everyone must have an interest in maintaining the law in a sense hostile to such a proposition, and of all classes workmen had the greatest interest in preventing such a doctrine being successful.

Attention was drawn to the decision of the operative carpenters and joiners forbidding the use of a bicycle by their members during the period of employment. It was contended that this contributed to benefit employers, and should not therefore receive continued sanction by the society.

It was reported that the Dewsbury Association had at the last meeting invited the Federation to hold the May meeting in that town, and it was resolved to arrange the meeting for May 18th.

Mr. Rushforth, on behalf of the Grimsby Association, invited the Federation to hold their next meeting at Grimsby.—J. DAVIDSON, Secretary.





THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 17th, 1911.

Volume XXXIII.

No. 851.



DETAIL OF LEAD FOUNTAIN IN GARDEN AT
SHOTTESBROOKE PARK, NEAR MAIDENHEAD.
DUNN AND WATSON, F.F.R.I.B.A., ARCHITECTS.



GARDEN AT SHOTTESBROOKE PARK, NEAR MAIDENHEAD. DUNN AND WATSON, F.R.I.B.A., ARCHITECTS.

This garden is enclosed by walls on two sides, and by cottages on the other two sides. In the centre is a lead fountain, with stone-paved paths around, and beds of heliotrope set among them.

THE ARCHITECTS' & BUILDERS' JOURNAL.

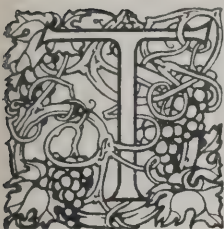
MAY 17th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 851.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

The Staircase Architecturally Considered.



THE recognition of the staircase as an opportunity for architectural effect in an interior seems to be in the main a modern evolution. Great flights of external steps have always appealed to the imagination of architects, especially in Roman times, as in the case of the immense flight which once led up to the Temple of the Sun at Baalbec; nor

is there any finer source of architectural effect on a large scale. But in the Roman residence, as far as we know, the staircase, where existing, was merely a practical means of access to an upper floor, hidden away in a corner, and not a means of interior effect. The same was the case with the English mediæval castle; the staircase was a corkscrew flight hidden away in a buttress or turret, an arrangement which was continued in some houses nearly into Renaissance times. Elizabethan architects, however, had begun to realise that the staircase, when it had once emerged from its turret, was worth treating in a decorative manner, and to produce a type of design for staircase balustrades, the most prominent feature admitting of decorative treatment.

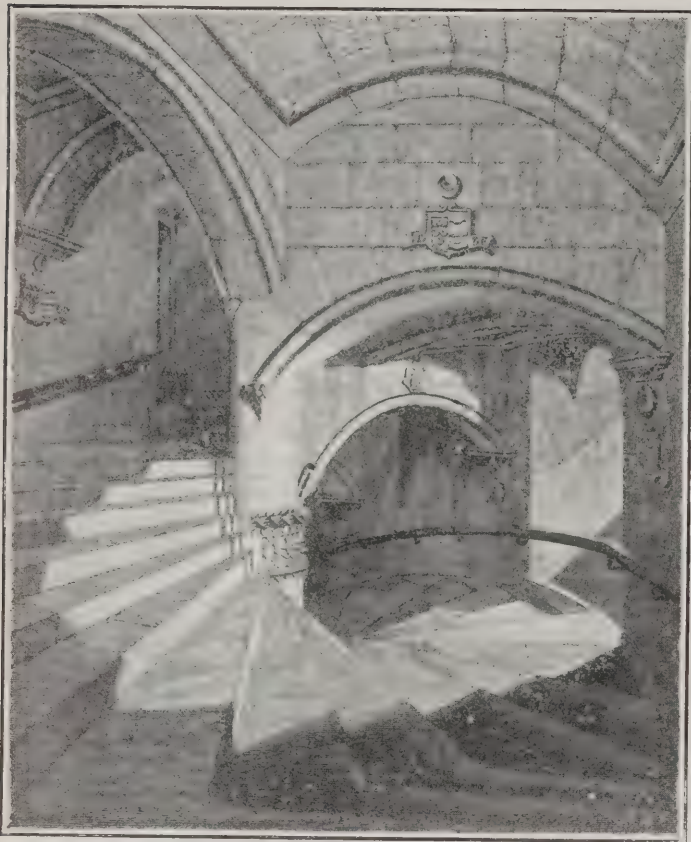
But the architectural treatment of the staircase does not really depend so much on its design in detail as on the place which it takes in the general architectural scheme of a building. In France the winding circular staircase, which in England was merely a convenience (or, considering its often narrow proportions, an inconvenience), was often of far more ample width and the occasion of a great deal of beautiful construction; and sometimes, as at Blois and elsewhere, of fine decorative or sculptured detail. Bacon, in his grandiose conception of a nobleman's mansion as it ought to be, suggests no idea of a state staircase forming part of the interior scenery; he would like that there should be "fair staircases," but "cast into turrets in the outside, and not within the row of buildings themselves"; evidently he regarded the staircase merely as a matter of utility, not of effect. And when the Renaissance disestablished the turret stair and set the fashion of rectangularly planned stairs, there still seems to have been a timidity and want of enterprise in the architectural planning of the stairs. Versailles and the Louvre, the two largest palaces in the world, have not a fine staircase between them, except one of quite modern construction in the Louvre. And in the plans of Renaissance mansions in England in which dignity and symmetry seem to have been especially sought after, it is rare to find the staircase made a state feature of internally. The state staircase in the English Renaissance mansion is the exterior one, generally a double one, leading to the hall door on the principal floor. Nothing can be finer as an approach to a large house than these exterior staircases, which are given up because the modern generation, apparently, has become too self-indulgent and afraid of the weather, and will not risk ascending an outside flight of steps under an umbrella. But there was seldom any interior staircase to carry out the promise of the external steps. It is rather curious that even Sir Charles Barry, who loved stateliness of effect in his buildings, did not like to

grapple with a grand staircase; he seemed to keep up the old tradition of the staircase as a utilitarian contrivance to be kept out of the main architectural lines of the interior. In Bridgewater House, in the Travellers' Club, and in the fine Town Hall at Halifax, the staircase is kept out of the way in a large square recess to itself, and rendered as little noticeable as possible. That was his idea evidently: that a prominent staircase interfered with the planning, and with the interior symmetry of the building.

The difficulty of treating a staircase as an important feature in interior architecture lies chiefly in the fact that, unless there is space to spare for treating it with double flights in symmetrical opposition, it is necessarily a one-sided feature, with a lower flight commencing one side of the hall and an upper flight finishing on the other side. Where this cannot be avoided the best solution, architecturally, is to mask it by an arcade or colonnade crossing the hall, which becomes the prominent architectural feature and conceals the want of symmetry in the staircase lines. But where there is plenty of space no treatment is so fine and effective as a central flight at the lower portion, and two opposed flights starting each way from the first landing. In the Natural History Museum Waterhouse arranged his upper staircase the inverse way with good effect, the two side flights being below and the centre flight carried up from the landing on an arch; but it is an effect perhaps better suited to a public building than a private mansion.

The arrangement of a very wide staircase going straight up between side walls, with a suitable number of landings, has a fine effect; this method was adopted for two of the main staircases in the Paris Hôtel de Ville. In E. M. Barry's design for rebuilding the National Gallery, there was a very fine suggestion for the staircase, which was to be carried up, in very wide proportions and with several wide landings, between parallel walls, straight up the centre of the building, the final landing on the main floor level being at the back of the building. This might have been thought wanting in convenience, but the effect would have been worth a little sacrifice in that sense; and though it was fortunate, on the whole, that the building was not carried out (for the style of the detail was certainly not equal to that of Wilkins's façade), this idea in the plan is worth commemorating. We noticed the same idea once in a set of drawings exhibited at the Paris Salon, we forget by what architect, for the state entry to a large ball-room suite. No form of entry can be more dignified.

In the case of wide straight stairs, however, even with plenty of landings, the question of width and height of steps becomes of practical importance. A handrail up the centre mars the appearance of such a stair very much; but without that safeguard it is necessary to have wide treads and low risers, or a fall might have serious consequences. We have not heard what was ultimately done about Burges's polished marble staircase at Cardiff Castle, but we remember that when we last saw it, it was not in use, having been condemned by the owner as dangerous, and the balustrade had not in fact been fixed. Dangerous it certainly was; it was a very wide and long unbroken flight of polished grey marble steps with sharp edges, about the average proportion of treads



STAIRCASE, FYVIE CASTLE.

and risers. Burges liked the effect, no doubt, but a slip near the top of such a staircase might have meant a fatal fall, and its design was not creditable to the practical sense of the architect. But it may be said that, generally speaking, the stairs of our public buildings are too high in the risers, both for effect and convenience. The pleasantest staircase to go up, in any public building in London, used to be that in Mr. Robson's building for the Institute of Painters in Water-colours, where the risers were hardly more than, perhaps, $3\frac{1}{2}$ inches; unfortunately this staircase was removed, when the interior of the building was re-arranged, to make way for a much inferior one. The British Museum staircase is one of the best in London in respect of commodious proportions. In many of the London houses built by the Adams, or in their period, it may be noticed that the rise of the steps is considerably less than that generally in use now. The height of risers affects the question of scale as well as convenience, especially in exterior steps. The steps outside the two great Art-Palaces at Paris, for instance, are at least an inch higher in the riser than they should have been (they would have been still better with two inches off them), and this small detail tends to impair somewhat the scale and dignity of the buildings.

A wide circular or semicircular stair has a fascination about it, as far as effect goes, but it is not a good form in a practical sense, for unless the centre round which it turns is a very wide one, a part of the steps nearest the centre is practically useless, if not dangerous; or if the steps are widened sufficiently for the inner part of the turn, at the outer radius they become too wide for convenience.

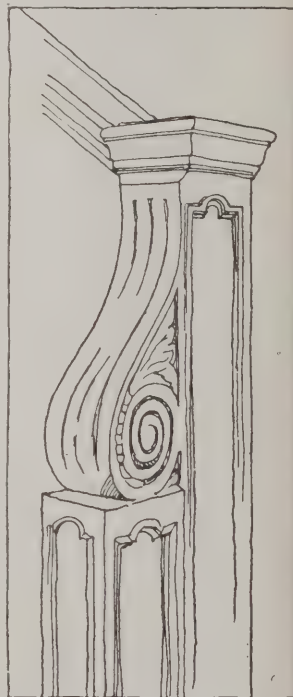
The history and development of the staircase in English private residences, large and small, is the subject of a recent publication* containing a good many interesting historical notes and a number of illustrations from photographs. The author suggests, and we think with reason, that in the early mediæval period straight flights of stairs, internal or external,

*The English Staircase: An historical account of its characteristic types to the end of the XVIIIth century. By Walter H. Godfrey, architect. London: B. T. Batsford; 1911, 18s.

were used only where there was to be a frequent use of them by a considerable number of persons, the characteristic circular turret stairs being thought sufficient for the ordinary private communication from one storey to another. The plan of Castle Rising is certainly an example of this; there are the wide straight stairway leading up to the guard-room, and the corkscrew staircases in connexion with the living-rooms. It is rather interesting to see, by the way, in the fine and spacious circular stone staircase of Fyvie Castle, one of the many instances in which Scottish architecture was affected by the close relation, at the period, between Scotland and France; Fyvie Castle being more like a French château staircase than the narrow turret-stair of the English castle.

The great change in the English staircase arose when, in the Elizabethan period, wooden stairs became common, and the staircase was no longer a thing built into the walls, but a separate structure erected independently of them, except as to planning. It was still, however, in the earlier houses at all events, set up in a recess in the plan, not part of a central staircase hall. Of all the forms of balustrading that can be employed as part of a wooden staircase, none is so effective as the rather thick and heavy spirally turned baluster which is so common a feature both in early and later Renaissance houses. Many of the thinner turned balusters, spiral and circular, are also very effective. Some of the other forms illustrated in the book are not admirable at all, though interesting as examples of the taste of the period, general or individual. The arched balustrade from Claverton; the imitation masonry balusters of Holland House; the inverted balusters with classic capitals on their thick ends, at Charlton House; these and others are poor stuff, bad in detail, on no account to be taken as models. There are two or three interesting examples of double newels side by side, used in order to simplify the problem of the junction of two flights in dog-legged stairs; it is best done in the examples from Castle House, Deddington; but there is a most interesting bit of detail of the kind from Clare College, in which the fact that the twin newels are not required to be the same height is recognised, and the difference in height neatly carried off by the introduction of a scroll ornament. The last step in the formation of the wooden stair was the getting rid of the enclosing string-board, and showing the ends of the steps with bracketting under them, often treated in a more or less decorative manner. This makes, no doubt, to use a common phrase, the "neatest job" for the finish of a wooden staircase; but there is a good deal to be said for the string-board, if solid and well moulded; if less elegant, it has a more solid structural appearance. The choice between the two methods depends a good deal on the general style of the house. Metal balustrades on a wooden stair we do not like; they belong properly to stone stairs, with which they are quite in keeping.

Among the numerous plates in the book under notice are some charming examples of rather simple stairs and balustrades, and among those which are really works of art are Inigo Jones's fine double staircase at Coleshill; that of Hatfield House; and that with rich carved balustrades at Dunster Castle. The book supplies a want; we are not aware of any English publication dealing with the history and design of the staircase from the artistic point of view, though there are several on the constructional side of the subject.



NEWEL POST, CLARE COLLEGE, CAMBRIDGE.

The "Economical" View.

IT is never very easy to get up much enthusiasm for the practice of appointing official architects; and the recent proceedings of the Stoke-on-Trent County Borough Education Committee in this matter rather tend to increase coldness. When it was proposed to appoint an architect to the Education Committee at a salary of £250 a year, an Alderman promptly opposed the motion. He feared the effect on the rates! Another gentleman endeavoured to allay this panic alarm by demonstrating that the £500 a year to which, as declared, the architect's department is to be limited, is not so extravagant as it looks to the hawk-eyed ratepayer. Almost immediately there is to be an expenditure of £17,000 on new buildings, for which, in the ordinary course, the architect's fees would have been £800; and "without hesitation he could say that if the appointment of an architect at £250 turned out as satisfactorily as he believed it would, there was no transaction since the Federation Act which was more likely to save money than this proposal." That, of course, is quite conclusive to the municipal mind, which, in at least one of its variable moods, affects to regard the saving of money (which somehow never seems to materialise) as the *summum bonum* of public polity. But is there no virtue in the paradox, "What I saved I lost"? A leader-writer in the "Staffordshire Sentinel" is equally convinced of the "economy" of the new arrangement, which he regards as "much cheaper, probably, than paying commission to outside architects in private practice." The same school of thought may find it convenient to forget this line of argument the next time it takes occasion to inveigh against the evils of municipal trading. But a town whose inhabitants comprise the mere handful of three hundred thousand or so, and whose elementary schools reach the paltry total of eighty, clearly cannot afford to consider the interests of the few professional men who might feel disposed to object to the argument from parsimony, and its implied effect of depriving them of whatsoever opportunities might occasionally arise of placing their services at the disposal of the local education authority! The Stoke-on-Trent County Borough Education Committee has taught us something, but has itself much to learn.

Revised Wiring Rules.

THE "Electrical Notes" published in another part of the present issue will be found to contain a useful résumé of the revised wiring rules of the Institution of Electrical Engineers. As in no branch of industry is progress so rapid as in that of the electrical engineer, it is not surprising to find it recorded by our expert contributor that in the four years which have elapsed since the rules were last revised the details of practice have undergone very considerable modification, and some of them are naturally recognised and confirmed in the new rules. A new standard of current-carrying capacity, based on the results of exhaustive tests by the National Physical Laboratory and the Cable Makers' Association, has been adopted, the old system of 1,000 ampères to the square inch being abandoned in favour of a standard based on temperature-rise, one important effect of the change being to admit, for smaller wires, currents about twice as great as those permissible under the old standard. Special attention has been given to the earthing of wires; and a new rule sanctions the practice of using efficiently metal-armoured conductors without conduit or wood casing, provided that the armour is connected to earth; while relevant to this there is a series of new rules dealing with earthed concentric systems. The new rules as to fuses are also important; and concerning the publication as a whole, our contributor has formed the opinion that while the new rules tend towards increased safety and efficiency, they also afford certain concessions—especially in the matter of currents—that are of considerable practical value.

Some Criticism of the Royal Automobile Club.

THE current issue of the *Architectural Review* includes a very fine series of photographs of the exterior and interior of the Royal Automobile Club, Pall Mall, the illustrations being accompanied by a critical article written by Mr. A. R. Jemmett, F.R.I.B.A. In this article some questions are raised as to the general disposition of the plan. Mr. Jemmett observes that the first thing that strikes one on entering the building is the good effect of the vistas in all directions produced by the axial lay-out. "Nothing could be more straightforward and charming in appearance." But after a study of the plan and closer acquaintance with the building, one gains the impression that this result has perhaps been obtained somewhat at the expense of the service and the minor arrangements. These seem to have been left to look after themselves, to have been pushed on one side, and crowded into the lighting areas, with the result that the utility of these areas is to that extent reduced. Everything—staircase included—has had to give way to the vista on the long central axis. . . . Every room requires an aspect and prospect in accordance with its nature. . . . In this case we find a site with a long south frontage, having a terrace overlooking gardens to St. James's Park. The natural suggestion would be to take advantage of such a sunny aspect and pleasant view, to place on this front the club-room and other general lounging-rooms of a similar nature. Instead, we find the greater part of this front occupied by a large gallery intended for entertainments . . . and when these functions are being given the aspect of the room is not appreciable. A south aspect is wasted on it; so is the view from the windows. . . . Another point suggests itself with reference to the relative position of this gallery to that of the club-room and the restaurant. It seems to have been found necessary to take large rooms through the building from back to front, lighted from both ends . . . The idea naturally occurs to one that the great gallery, being mostly used by artificial light, and rising through two floors, could have been taken through the building with less detriment to its interior, effect, and that this would provide a south aspect on two floors for large rooms, one over the other, overlooking the Park. . . . The position of the rooms on the front elevation to Pall Mall raises a similar question. Here again we find that, on the ground floor, nearly half the frontage is taken up by rooms which are not in constant use and that require no special outlook, while on the first floor the position of honour on this front, with the best view over Pall Mall—the space that might reasonably be expected to be devoted to the general use of members who wished to sit and look out over the life of the street—is accorded to a billiard-room. But when people are playing billiards they do not appreciate the best view of Pall Mall that the building affords. . . . With regard to the exterior, the grouping adopted seems to be more appropriate to a building facing an open square than to one in a comparatively narrow thoroughfare. But considering this elevation as a façade, and bearing in mind the limitations of height imposed upon it by the Crown lease, it is difficult to speak too highly of the knowledge and mastery of style and the high technical skill displayed. The façade is admirable in this respect, and far in advance of most contemporary work in London. . . . Its very excellence challenges serious criticism, whereas so much of the work of gifted men of the present day, by reason of its irresponsibility and lack of technique, is beneath criticism." Another excellent article in the same number of the *Review* is one by Mr. Harry Sirr, F.R.I.B.A., on "The Rennies and Waterloo and London Bridges." And among other features that make up a notable issue are—An appreciation (very fully illustrated) of the work of the late Mr. Carrère, by Mr. Francis S. Swales, an article on Beaufort House, Chelsea, by Mr. Walter H. Godfrey, and some splendid drawings of restorations and ruins by Mr. A. C. Conrade.

A New Piece of Vandalism.

THE façade in connexion with the Piccadilly Hotel, designed by Mr. Norman Shaw, with its open screen of columns, forms one of the finest pieces of modern street architecture, but of course is incomplete at present, as the eastern pavilion, which should resemble the one on the west, and complete the design, had to be postponed until an existing shop at the end of the new building could be acquired; but everyone supposed that this was merely a matter of time. It seems almost incredible, but it appears to be the fact, that the proprietor of the shop in question has now received permission, on setting back his building to the new frontage line (which must have been done in any case), to rebuild it as it stood before, the stones being taken down and rebuilt in the new position; an operation which we understand is now going on. So that one of the finest pieces of recent street architecture, by our leading architect, is to be left permanently incomplete and disfigured. We do not believe there is another capital in the world in which such a thing would be allowed. The controlling authority in the matter is, we believe, the Department of Woods and Forests, who own the site, and who did a public benefit in the first instance by insisting on an eminent architect being employed for the new Piccadilly buildings. Surely they are not going to allow what may be called their own scheme to be thus stultified?

Society for the Promotion of Roman Studies.

THIS Society held its first general meeting on Thursday last at the Lecture Theatre in Burlington Gardens; the rather small attendance was probably due to the state of the weather. The Report of the Council, which was formally adopted, of course had nothing to say as to work accomplished by the Society, as there has been no time for that yet; all that could be communicated, besides a brief recapitulation of the circumstances of the foundation of the Society, was that it has started in a fairly good condition in regard to funds, and that it has entered into friendly relations with the Hellenic Society and the Society of Antiquaries in respect to rooms, library, and meetings; in fact, the library of the Hellenic Society will be carried on as a joint library of the two Societies, members of each Society having the right to its use. Professor Haverfield, the President, in a short address, suggested that in Roman history there was at present need for accurate and scientific research; Latin literature had been examined very thoroughly, and it was to archaeological research they must look to carry their knowledge further; for although archaeological evidence was mostly unwritten, it often yielded truer and fuller results than many inferior historical records of written literature. He also promised that while carrying on researches at Rome, Roman Britain need not be overlooked. Whether there is much more to be discovered now as to Roman Britain may be doubtful, but there is no doubt that any further discoveries will be of interest. Intending subscribers to the Society for the Promotion of Roman Studies should write to the Secretary, Mr. G. D. Hardinge-Tyler, at 19, Bloomsbury Square (the same address as the Hellenic Society).

"In Verdure Clad."

NATURALLY the denunciation of ivy as a destroyer of that to which it clings has not been allowed to pass unchallenged. No matter what Tweedledum may choose to assert, Tweedledee is sure to say, "Contrariwise." A reverend correspondent of the "Guardian" hopes that none of his clerical brethren who are *in esse* or *in posse* custodians of churches "will be led into the mistake of supposing that ivy destroys buildings." "It is," he urges, "a covering, and therefore a protection against weather." The shirt of Nessus may have been a protection against weather, but nevertheless Hercules found it a very destructive covering.

The pro-ivyist cites several cases within his own experience of ivy-covered walls of ancient date remaining sound and dry though ivy-clad, and of others which, when the ivy was removed, became damp and required frequent repair. Moreover, with respect to a vicarage, he says: "My west wall is, for one-third, perhaps, ivy-clad. That part of my west wall I have during fifteen years never repaired. The rest of the same wall, not ivy-clad, I have had to repair two or three times during my fifteen years' occupancy." There is much more to similar effect, but none of it is very convincing. In view of so much conflict of experience and opinion, it might be worth while to have the matter scientifically investigated. Here is congenial work for the Society for the Preservation of Ancient Buildings. But, even though they should be so fortunate as to establish a definite conclusion on this practical issue, there would still remain unsettled the æsthetic controversy. Upon the question, Is it right and meet to obscure the face of a beautiful building with a rank overgrowth of creeper? we should have no hesitation in voting with the noes, although we feel perfectly certain that the ayes would have it by an overwhelming majority.

M. Abella and Washington University School of Design.

THE directors of Washington University announce the appointment of M. Charles Abella, of Paris, France, as Professor of Design in their School of Architecture. M. Abella is a graduate of l'Ecole des Beaux Arts of Paris, and was regarded as one of its brilliant students. He has won a number of honours, including seven medals and several important competitions. He was three times *logiste*, and in 1907 secured the first second Grand Prix de Rome. After leaving l'Ecole des Beaux Arts, M. Abella began the practice of architecture in Paris, and in 1908 he won the public competition for the Hôtel de Ville d'Essones; while in 1910, in association with M. Hebrard, he won the public competition for a Home for the Insane, which will cost approximately 4,000,000 francs. It is interesting to note that for several years M. Abella has assisted M. Bernier as patron of the Atelier Bernier. M. Abella's name was suggested to the University by M. Victor Laloux, member of the Institute of France and patron of the Atelier Laloux. He will assume his duties at Washington University in September, 1911, and will take direct charge of the work of intermediate and advanced design.

Labour Unrest in the Building Industry.

THERE are ominous rumours of coming troubles in the building trade. Certain sections of the builders' labourers in the London area are said to be greatly dissatisfied with the refusal of the London Master Builders' Association to consent to the formulation of a working-rule agreement, or even to meet the men in discussion of the matter. Consequently, it is reported there have arisen among the men the easily recognised symptoms of the *malaise* known as "labour unrest," which, as we all know from past experience, is only too apt to develop into more serious trouble. At Nottingham there is a working agreement with the labourers, whose constant care is to get it altered in their own favour. As long ago as November, 1909, they gave notice of a demand for an increase of wages from 6½d. an hour to 7½d., and ultimately the matter was submitted to arbitration by the Board of Trade; the arbitrator, Mr. A. A. Hudson, issuing, in June, 1910, an award that, maintaining the old rate, naturally did not please the labourers, who, in the following November, gave notice of a demand for new rules in which the chief feature was a proposed increase in wages to 7½d. per hour. This notice, which expired on May 6th, is supported by the Building Section of the Nottingham Trades Council, which has given the employers notice that, in the event of the unionist labourers striking, the whole of the



GARDEN AT SHOTTESBROOKE PARK, NEAR MAIDENHEAD. DUNN AND WATSON, F.F.R.I.B.A., ARCHITECTS.

skilled workmen will refuse to work with non-union labourers. The Nottingham employers protest that the conditions of the trade show no substantial improvement on those prevalent when Mr. Hudson made his award, and certainly do not warrant any increase at all, and that the rate for labour in Nottingham is already higher than the rates ruling in nearly all the great centres of the industry. The Nottingham employers' case seems unanswerable; but unfortunately the appeal to reason is largely lost when labour becomes rampant. Otherwise it might have been supposed that the severe privations from which through an unprecedentedly long period of depression the labourers have suffered would have made them anxious to promote recovery; whereas their present ill-advised attitude threatens the disaster of an untimely relapse. The development of the Nottingham case provides a rather sardonic commentary on the position in London. To accede to the labourers' demand for working rules is apparently to give them the power to command the co-operation of the skilled workmen in any strike in which the labourers see fit to indulge; and, noting this effect in Nottingham, the London Master Builders, it may well be supposed, will be confirmed in their refusal to arm the labourers with this fresh weapon of offence.

A Modern Garden.

THE accompanying illustrations show that delightful garden at Shottesbrooke Park, near Maidenhead, which has been carried out from designs by Messrs. Dunn and Watson, F.F.R.I.B.A., architects, of Lincoln's Inn Fields. The garden is enclosed by walls on two sides, and by cottages on the other two sides. The paths are paved with stone, and the two main paths have pergolas of brick piers. The fountain which stands in the centre of the garden

is in lead, and was executed by Mr. G. P. Bankart. The new cottage shown in the view on page 510 was built by Messrs. Cooper, of Maidenhead, who also repaired the old cottage seen in the view above.

Valuation for Land Taxes: Form VIII. Invalid.

IT is not often that what may be without invidiousness described as sectional organisations are able to deal such an effective stroke as that which has been delivered by the Land Union against Form VIII. On October 23 last the Land Union issued a writ against the Attorney-General on behalf of one of its members, Mr. G. H. Burghes, who was called upon to fill up Form VIII. as part of the procedure for obtaining what the Commissioners of Inland Revenue considered to be necessary information in connection with the valuation for the new land taxes. When the form was first issued great dissatisfaction arose among professional men connected with land and property, owing to the onerous nature of the demand made upon them, and the fact that not only did it entail a great deal of expense and trouble for which they could make no charge, but the form required them to disclose not only descriptions and precise situations of the lands and properties in respect of which they received rent, but in many cases estate agents and others found themselves in a position of being called upon to supply valuation officers, who were themselves in the same kind of business, with the names and addresses of the clients for whom they acted. In the case of Mr. Burghes, he was not only required to give all this information, but to supply it in respect of a place which the evidence went to show was no longer, if ever, existing, except as a division for the collection of taxes, and not definable by the local authorities. The penalty for not complying with

the demand within a limit of thirty days was a fine not exceeding £50. On May 10, in Mr. Justice Warrington's Court, judgment was given for Mr. Burghes on all the important issues raised. His Lordship made a declaration that the issue of Form VIII. requiring the recipient to disclose the name and address of the person on whose behalf he received or paid rent, without specifying the particular property in regard to which information was required, was illegal, and need not be complied with, and that the non-compliance with it did not render the recipient liable to any action for penalty. The Judge also held that it was illegal to require the particulars demanded by Form VIII. to be sent to any appointed officer, and that the information could only be required to be sent to the Commissioners themselves. It is now contended by the Land Union that Mr. Justice Warrington's decision raises a grave question as to whether the same reasoning should not be applied to forms of a similar nature issued by Government Departments, and establishes the point that a declaration can be obtained against a Government Department when it oversteps the limits of the powers conferred on it by an Act of Parliament. This, it is pointed out, is a new form of action in our judicial system, and is the most far-reaching decision of recent years. The Court has declared that it is competent to safeguard the liberties of the subject against the tyranny of bureaucracy set up by recent legislation. The decision also emphasises the necessity for an organisation such as the Land Union which is willing to take up cases on behalf of its members, because it seems impossible to obtain costs against the Crown, and the individual is not in a position to undertake the expenditure involved in fighting the Attorney-General, representing the Crown.

London's King Edward Memorial.

LONDON is very backward with regard to its King Edward memorial. The inevitable controversy on the subject is only just beginning. Mr. Basil Holmes, secretary of the Metropolitan Public Gardens Association, has his eye on Trafalgar Square. There is, he reminds us, a broad paved space adjoining and overlooking Trafalgar Square on the north side opposite the National Gallery. If the central portion were added to by building out into the square, in line of course with Gordon's statue and Nelson's Column, an elevated platform would be secured, entirely free from traffic difficulties, but which would, he ventures to think, serve as an excellent site for the late King's Memorial. In such a position it would be in the midst of the people, and would be seen and known of all men to an extent that could never be possible if it were side-tracked in St. James's or some other park. A flight or flights of steps might lead down from the platform to the lower level of the Square. An archway could be arranged in such a structure, so as not to interfere with the standard measures of length that are inserted at the foot of the retaining wall on that side of the Square. The statue of King George IV. occupies the north-east corner of the Square, and that of another King could be suitably placed on the vacant pedestal at the north-west corner. We should then have three equestrian statues of monarchs, with King Edward's in the centre dominating the Square and forming its most prominent object; for, not being so high as Nelson's Column, it would at once catch the eye of the spectator at an ordinary level. If at the same time something could be done to treat the Square in whole or in part as an architectural garden, as has been suggested by the Metropolitan Public Gardens Association to the First Commissioner of Works and other authorities, though not by any means a *sine qua non* of the suggested site, such an improvement would add to its effectiveness besides giving a much-needed note of colour to what at present is a bare stony expanse. Mr. Holmes was in Stuttgart the other day in connection with a strenuous visit to certain German cities, and he was much struck by the stately Schloss Platz, with its column, statues, and fountains,

which represents Trafalgar Square as it might be, if made brilliant with grass and flowers, and bordered with free-growing and naturally shaped trees planted alongside the surrounding thoroughfares. It was there the idea occurred to him. But how would a reformed Trafalgar Square commend itself to the "Reformers," who might offer violent objection to this transformation of their favourite meeting-place?

St. Paul's Bridge Once More.

MR. BERESFORD PITE makes some very caustic comments on the St. Paul's Bridge affair. It would appear from the passing of the Preamble to the Corporation of London (Bridges) Bill, he says, that architectural interests are in some danger of being left to the tender mercies of the police in the planning of thoroughfares for traffic. It may at once be granted that Sir W. Nott Bower is the greatest living authority on the management of congested traffic in the crooked and narrow arteries of the old heart of the City, but in the design of a new thoroughfare as wide as Westminster Bridge the City Police Commissioner's word need not be the last. The traffic question in relation to St. Paul's Bridge, Mr. Pite continues, ought to be dealt with both scientifically and practically. Have the Corporation shown the Committee of the House of Commons a plan with all the traffic lines marked on, so that the collision points and the space wherein to evade them can be considered? To students of town planning it appears an axiom that traffic questions solve themselves on architectural lines, but to this London is still blind. Reference to Mr. John W. Simpson's paper (the *Journal* of the Royal Institute of British Architects, Vol. XII., third series, 1905), Mr. Pite says, will supply further useful illustrations on this matter, and illustrate the importance and value of a scientific study of the problem, on which the late Camillo Sitte, of Vienna, and Dr. Stübben, the celebrated living German authority on town planning, are cited. The objection to a skew bridge cannot, in Mr. Pite's opinion, be of much weight on engineering grounds, as Mr. Basil Mott, the Corporation's Engineer, himself prepared a plan for rebuilding Southwark Bridge as a skew bridge. The Corporation seem to contemplate the "artistic embellishment" of the bridge after its erection on wrong lines, and to be complacent both about the crooked view of the Cathedral and Sir Christopher Wren's plan. On this, Mr. Pite says, he need only remark, we are painfully aware that architecture may be purchased and spread like jam upon something disagreeable which has to be swallowed; but this was not Dr. Christopher Wren's prescription. His lamented plan for the rebuilding of London was made upon the principles now urged against the scheme of the Corporation by the representatives of his art—namely, those of making the plan of a city so as to utilise a grand vista of the Cathedral. No streets southward from the Cathedral offered Wren this possibility, as the descent to the river was steep and short, and both the Cathedral which he designed (which it must not be forgotten was not the St. Paul's that now is, but a very different design) and his city plan were abandoned. It may not be amiss to cite what Professor R. T. Blomfield, A.R.A., says of Wren's "masterly plan which the King accepted" and which had to be sacrificed through the blindness of the City Authorities:—"His fine intelligence grasped the full architectural possibilities of vistas of broad straight streets linked together by groups of public buildings, the importance of a commanding site for these buildings, and the absolute necessity of a complete and consecutive scheme to the dignity of a great city." Can there be any doubt, Mr. Pite asks, that if Sir Christopher were with us now he would seize the grand opportunity afforded by erection of the viaduct approach from a great bridge, of noble width, to the porch below the Dome, which is the pride and visual embodiment of London herself? The City have an opportunity, and Parliament should insist upon their making use of it, Mr. Pite concludes.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Imports and Exports of Cement.

Mr. Kellaway having interrogated the President of the Board of Trade with regard to the imports and exports of cement, Mr. Sydney Buxton stated that the value of the cement imported into the United Kingdom for home consumption (imports less re-exports) was £408,000 in 1903 and £77,000 in 1910. The value of the cement of domestic production exported from the United Kingdom was £677,000 in 1903 and £1,062,000 in 1910.

Housing Accommodation in Immingham.

Sir Alfred Gelder asked the President of the Local Government Board whether his attention had been drawn to the serious lack of housing accommodation for railway, dock, and other workers at the new Immingham Dock, North Lincolnshire.

Mr. John Burns answered in the negative. He said he had referred to the reports of recent years of the medical officer of health of the rural district of Grimsby (in which this place was included), and found that he reported very substantial building developments in Immingham and Little Coates in connection with the construction of the dock at Immingham.

Westminster Abbey in Danger.

On the 9th inst. Mr. Booth called attention to the risks from fire involved in the building of timber stands round Westminster Abbey, and asked whether the Abbey had been guarded at night by one fireman.

Mr. Dudley Ward replied that since the preparations for the Coronation were commenced two firemen had been on duty at night, and every precaution had been taken against the risk of fire. All such arrangements had been made with the approval of the head officer of the London Fire Brigade. Provision had been made of a large number of extinguishers: additional hose had been supplied; and the most approved system of fire alarms had been established in direct communication with the nearest fire station. The Office of Works was in consultation with the chief officer of the London Fire Brigade as to the desirability of taking further precautions, and any that might be considered necessary by him would be adopted.

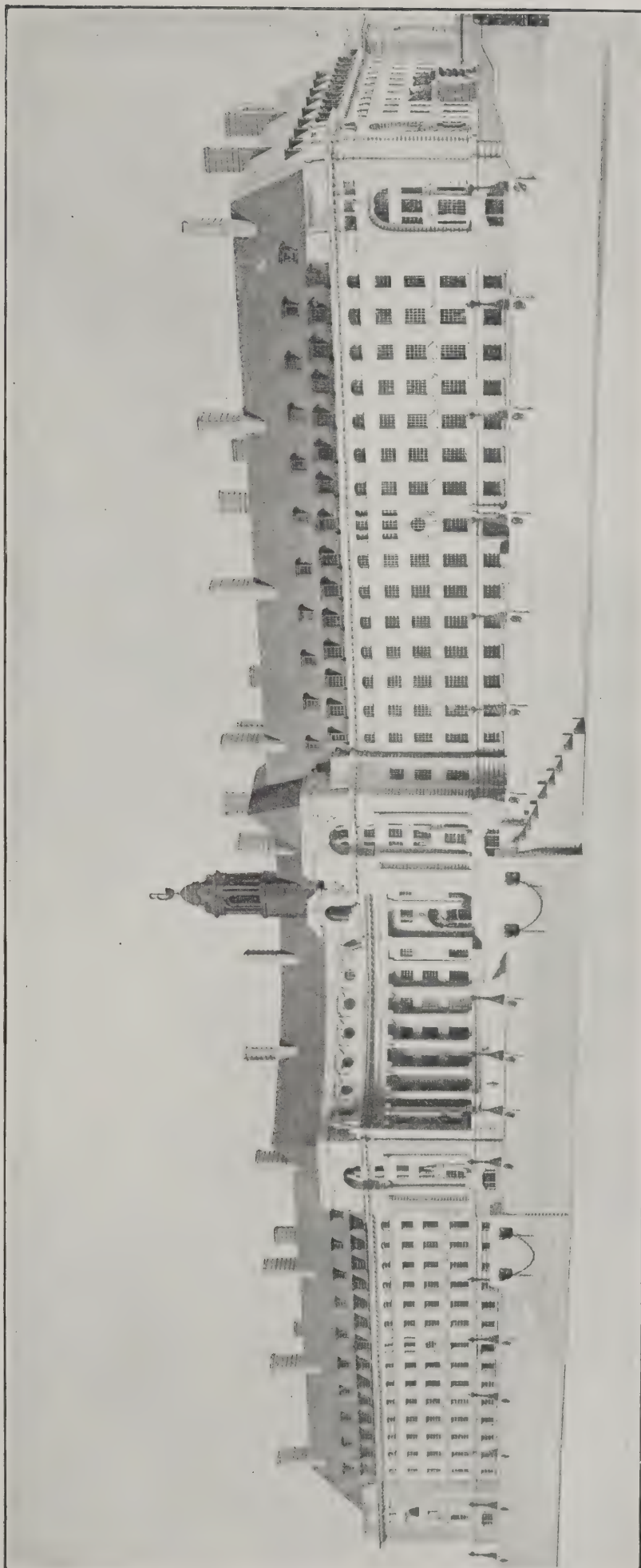
Sir Henry Craik pointed out that in the immediate vicinity of the Abbey there were immense stacks of timber, while close by were some three or four smoking chimneys attached to temporary structures.

Mr. Swift MacNeill remarked that it seemed criminal not to have more than two firemen attached to this duty.

Mr. Dudley Ward said the chief officer of the Fire Brigade thought it enough.

Mr. Booth asked whether business negotiations took place with a firm who supplied fireproof timber for the supply of the wood to be used in the stagings in and around Westminster Abbey, and whether a change in the plans of the First Commissioner was made at the instigation of the contractor.

Mr. Dudley Ward said the reply to the first part of the question was in the affirmative. The reply to the second part was in the negative. In the course of further interrogation, Mr. Dudley Ward denied the suggestion of Mr. Booth that although the firm was willing to supply fireproof timber the reason for



This illustration we are able to publish by courtesy of Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to the London County Council (who is associated with Mr. Knott in carrying out the new County Hall). The model has been prepared to show the effect of omitting the central colonnade on the river front, but the design is still subject to revision.

MODEL OF THE NEW COUNTY HALL, SHOWING ALTERATION IN RIVER FACADE. RALPH KNOTT, ARCHITECT.

refusing it was that it would cost more than double the amount of ordinary timber.

Three days later Mr. Dudley Ward informed Mr. Booth that the number of firemen on duty at Westminster Abbey had been increased, and four were now engaged—two by day and two by night. The Dean and Chapter insured the Abbey and its contents for £50,000, and the insurance office, being satisfied with the precautions taken, required no extra premium in consequence of the works now proceeding. As no amount of insurance could compensate for the destruction of the Abbey, the precautions against fire were the essential point.

Uninsured Government Buildings.

Mr. Booth, following upon a statement by Mr. Dudley Ward that Government buildings were not insured against fire, asked whether the furniture and contents of the Houses of Parliament were insured, and if not, whether the Government would reimburse members of Parliament for any loss sustained in case of an outbreak causing injury to personal effects of members.

Mr. Dudley Ward answered the first part of the question in the negative. The Government, he added, would be prepared to consider the losses of members.

Closing and Demolition Orders.

Mr. Cassel asked the President of the Local Government Board whether he could state to which of the officers of the Board the duty was entrusted of reviewing the reports of the inspectors appointed by the Board to hold local inquiries in regard to appeals against closing and demolition orders under the Housing, Town Planning, etc., Act, 1909; whether the duty was exercised subject to any defined rules or regulations; and, if so, whether these could be perused by anyone interested; whether, in view of the fact that an owner against whom a closing or demolition order was made under the Housing, Town Planning, etc., Act, 1909, had on the facts no right of appeal to a court of law, he would consider the expediency of altering the procedure so as to secure to an appellant the right to appear before the authority by whom the inspectors' reports were reviewed; and whether, in addition to the communications previously received from other local authorities, he had received a communication from the St. Pancras Borough Council expression dissatisfaction with the present appeal against closing and demolition orders, and asking him to take steps for the promotion of legislation to effect the amendment of the law in the direction of the substitution of a judicial tribunal for the Local Government Board as the appeal tribunal; and what steps he proposed to take.

Mr. John Burns, in reply, said appeals were made to the Board, and the Board decided them after carefully considering the whole of the facts. In many instances the cases had been referred to himself or to the Parliamentary Secretary of the Board (Mr. J. Herbert Lewis) for final decision. The duty of deciding the appeals was exercised subject to the provisions of the Housing Acts, and the procedure generally was in accord with that which had been in operation for at least thirty years in connection with appeals under section 268 of the Public Health Act, 1875. He saw no reason to alter it. He had received a communication from the St. Pancras Borough Council. He did not propose to take any steps in the direction indicated.

LEGAL CASES.

Builder and Apprentice.

At the Wigan County Court, before Judge Bradbury, Robert G. Dawson, builder, of Station Road, Wigan, claimed the fulfilment of an indenture of apprenticeship made between the trustees of the Mason and Bullock Charity, Robert G. Dawson, Wm. Hampson, and Joseph Hampson, the last named being the apprentice in question.—Plaintiff's case was that the lad Joseph Hampson, after serving three and a half years as an apprentice joiner, had not been to his work since March, when his father removed to Southport. If the lad did not return the claimant would have to engage another man at a higher rate of wages, and he estimated he would lose more than £100.—For the defence, it was submitted that it would not be equitable to make an order in that case. The father, after being with a firm 20 years, was discharged during the trade depression at the beginning of the year, and he had since got work at Southport, and gone to live there. He was not in a position to keep the boy in lodgings in Wigan, and he could not send him by train, because he could not get to his work until 7.30 in the morning.—His Honour: It is quite obvious that this lad could live in Wigan and go to his work. Thousands of them do. He must undertake to go back to his work, or if he does not I shall assess damages against the father.—The parties having consulted it was reported that £50 had been suggested at first, but this was reduced to £35. The defendant then offered £15 in three instalments.—His Honour: Is the father willing he should go back to his work? If not, I shall deal with the case, and it will not be a question of the payment of instalments.—The father of the apprentice having been called to the witness-box, His Honour said he would advise him strongly in his own interests to allow his lad to go back to serve his indentures. It might be hard for him to fulfil his contract, but he was afraid it would be harder if he did not. Asked by his Honour if he would undertake that the lad go back to serve his master, the witness replied: As long as I can afford I shall pay his lodgings in Wigan. That is all I can do.—His Honour: Then I will take it the defendant undertakes to go back to his work, and the case is adjourned sine die, defendant to pay costs on B scale.

Claim by an Architect.

In the King's Bench Division, on May 6th, Mr. Justice Coleridge tried an action in which Mr. C. Arnold Clayton Green, architect, Sunderland, sued Mr. James McEwan, builder, Newcastle, to recover the sum of £325 in respect of professional fees.—Mr. Goddard said his client claimed in respect of making a survey on land on which defendant proposed to erect a skating rink, assembly rooms, and picture hall, and in respect of plans for same. The amount claimed was 2½ per cent. on the £13,000 which plaintiff said was the expected cost of the proposed buildings, and he claimed on that percentage because the scheme was subsequently abandoned by the defendant. There was also a claim for £18 for plans for a small house which plaintiff prepared for defendant. The defence set up was that the employment was on the assumption that in no case was the plaintiff to recover payment before the contract for purchase of the land was signed,

and that for the work done after this the plaintiff was to recover 5 per cent. on the actual work carried out. That raised the true issue between the parties. The parties met in regard to a small house, and thus this present proposal came forward. Plaintiff agreed to prepare the preliminary plans gratuitously on the understanding that if the defendant secured the land, then the plaintiff should act on the usual professional terms. The land was acquired, and plans were prepared by the plaintiff, and were finally approved by the Corporation, and then the employment began. Plaintiff had received £100 on account of work done. Defendant never raised any objection to the plans. The scheme had been abandoned because it was found that it would cost £18,000 to carry out, and not the £13,000 which was the original amount. Plaintiff denied that there was any agreement that he should only be paid on the work done, and no complaint was ever made that the plans were too elaborate.—For the defence, Mr. J. Critchley, a Newcastle architect, was called, and said he took out the quantities for the plaintiff's plans, and the cost came out at £18,000. In his opinion plaintiff was not entitled to charge 2½ per cent. on the cost.—His lordship entered judgment for the plaintiff for £223 and costs.

Notice of Building Works.

At Guildhall, London, on May 9th, Messrs. Rosser and Russell, Limited, of 22, Charing Cross Road, were summoned before Alderman Sir John Bell, for having, on or about May 2, begun to execute certain "building works" at 144, Leadenhall Street—a block of offices—before serving a building notice on the district surveyor. The complainant, Mr. J. Todd, the surveyor for the eastern division of the City, said that on May 2 he found that the defendants were putting in a steam heating installation at 144, Leadenhall Street. He had received no notice under the Building Act. Sir John: Were there any structural alterations going on? Mr. Todd: Not by this firm. I had had notice from the firm of builders, but not from the defendants, who are heating engineers, and who are doing this work, which I submit is a structural alteration under the Building Act. Sir John: That's the crime, is it? Mr. Todd: I don't say that it is a crime at all, but merely that the defendants acted under a misapprehension in thinking they were not required to give notice. My claim is that this kind of work is a matter for the supervision of the district surveyor under section 64, which deals with chimneys and flues. It is my duty to see that these constructions are in accordance with the Act. Sir John: What would have been the fee payable to the district surveyor? Mr. Todd: Something like £2. Mr. Todd submitted that he had only acted in accordance with the Building Act, which it was his duty to see was complied with. Sir John: I don't see it at present. I suppose the defendants ought to have known the provisions of the Act? The firm's chief clerk said they had written to Mr. Todd and apologised for the oversight. Mr. Todd: Since the issue of the summons Mr. Russell has served me with the notice which before he refused. He has also given me every information. Mr. Savill (magistrates' clerk): Are you willing to withdraw the summons? Mr. Todd: No. I apply for a nominal penalty to establish a principle, and I ask for 3s., the costs of the summons. Sir John: I know what district surveyors are. One shilling fine and no costs.

THE PROPOSED NEW SCIENCE MUSEUM.

Much newspaper correspondence has ensued on the announcement that it is proposed by the First Commissioner of His Majesty's Office of Works and by Mr. Runciman, President of the Board of Education, to induce the Government to sanction a scheme for erecting a large two-storeyed building which will cover practically the whole of the ground now occupied by the ornamental gardens on the west side of the Natural History Museum, facing Queen's Gate. A letter of protest, bearing twenty-seven signatures, headed by that of the Marquis of Dufferin and Ava, declares that if this proposal is carried out it will not only ruin the architectural effect of the late Mr. Alfred Waterhouse's masterpiece, erected at cost of over £700,000, but will also entirely destroy the beautiful surroundings of that popular institution, which is the only large public building in London standing in its own gardens.

The petitioners point out that the plans recently proposed for altering the present path and for pulling down the bridge across St. James's Park have fortunately been abandoned owing to the strong protests made in Parliament and elsewhere against such an ill-conceived scheme, and they trust that the public feeling against the devastation of the Museum's grounds may be equally strong and sufficient to avert what, they contend, can only be regarded as a very grave error of judgment.

In 1899 the boundary line to the north of the Natural History Museum was definitely fixed by his Majesty's Government, and the Trustees of the British Museum (of which the Natural History Museum forms a branch) were given a sufficient portion of ground to enable them to complete, when necessary, the original plans for the building and to provide for the future expansion of the

collections. On part of the ground to the rear of the Museum a large one-storey building for specimens in spirits was erected in 1883, and this has since been greatly extended and altered as the accommodation became insufficient. The total cost of this Spirit Museum and its fittings as it now stands amounted, it is believed, to about £30,000. Under the present scheme of the Office of Works it is proposed to pull down not only this very expensive building, but also the Museum Lodge, in Queen's Gate, and to erect a new and much larger Spirit Museum on the western gardens, facing Queen's Gate. It is contended that this plan, if carried out, would not only entirely destroy the symmetry of the Museum gardens, but would take away from the Trustees most of the ground to the north of the Natural History Museum given them in 1899 for extension, ground which will shortly be very greatly needed. It would entirely cripple the Natural History Museum for all time. The extension of the Natural History Museum contemplated at present would in no way interfere with the gardens, which are so much used and loved by the public.

The reason put forward for such a destructive scheme is that the Science Museum, which is about to be erected to the north of the Natural History Museum, requires more space than is at present available.

In a printed sheet which has been somewhat widely circulated by those interested in the Science Museum, it is stated that the Office of Works scheme would be "without detriment to either Museum"; but this, the writers of the letter maintain, is an entire misrepresentation of the facts so far as the Natural History Museum is concerned.

It is a matter of public knowledge (the letter declares) that the Trustees of the British Museum are absolutely opposed to the present plan, and it is to be hoped that the public will not allow the future development of the Natural History

Museum to be seriously hampered by a scheme which must be most detrimental to the welfare of that institution, and, if carried out, would always be deplored by the large section of the public interested in natural history.

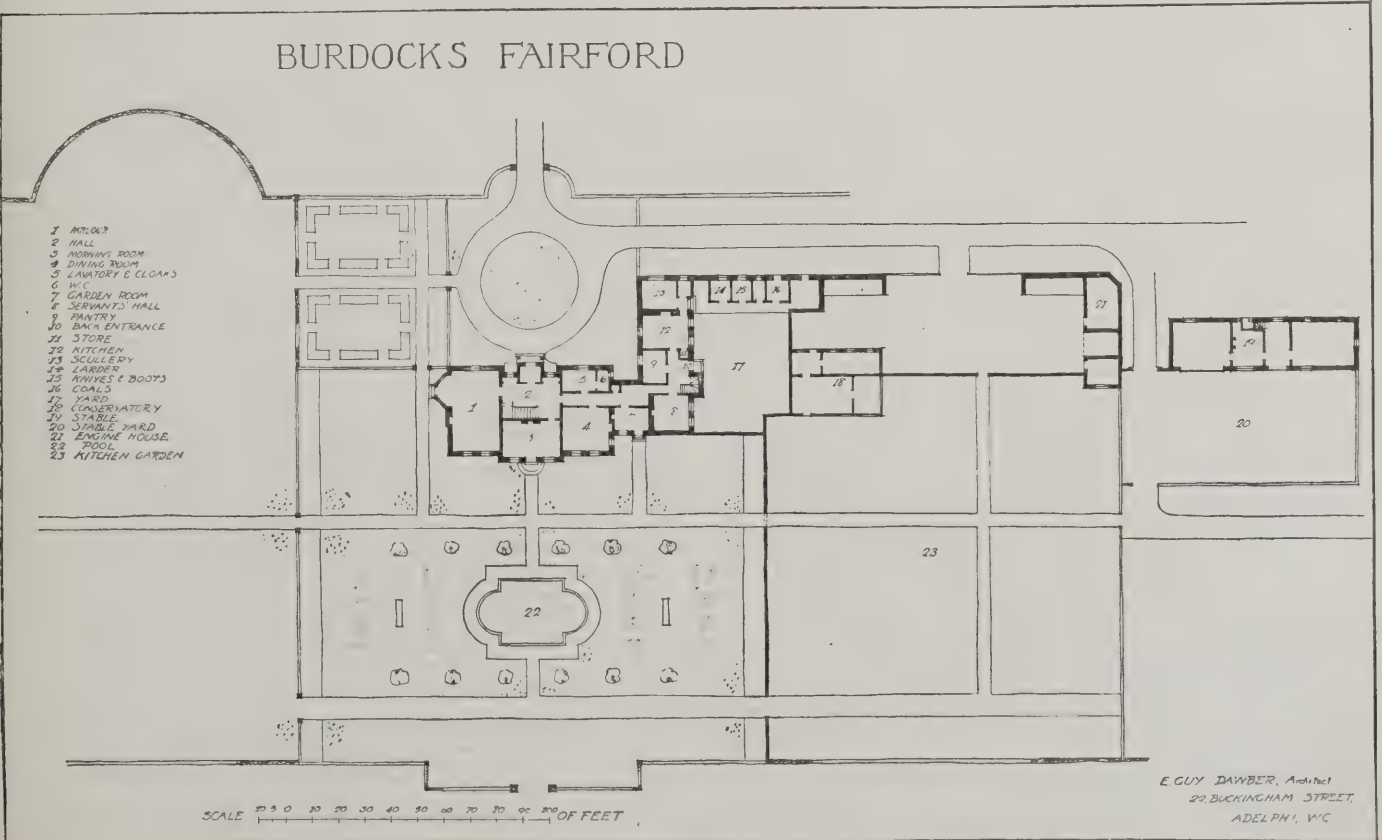
REINFORCED CONCRETE WORKS.

In a notice of the exhibit of Messrs. William Moss and Sons, Ltd., at the recent Building Trades Exhibition, we mentioned a list of contracts carried out by that firm, including the National Gallery extension, Water Towers at York, Billiard Hall at Clapham, and Racecourse Stand at York, from which it might be inferred that their system of reinforced concrete was the one employed. These works, however, were all executed on the Kahn system, according to designs prepared by the Trussed Concrete Steel Co., Ltd., of Caxton House, Westminster. The misapprehension arose from the circumstance that these works are illustrated in Messrs. Moss's booklet as examples of buildings carried out at various times previous to the formation of their reinforced concrete department, of which the booklet is an announcement.

OUR PLATE.

"Burdocks," Fairford, Gloucestershire, designed for Mr. J. Reade by Mr. E. Guy Dawber, F.R.I.B.A., and now nearing completion, is situated about a mile from Fairford Station. It is built of local rubble stone, with Bath stone dressings and coursings, the roof being covered with stone slates. The entrance lodge and stables have been built of similar materials. The building contractors are Messrs. Ylles, of Fairford. The interior fittings and joinery are being carried out by Messrs. Walker and Slater, of Derby, and the sanitary work, etc., by Messrs. Dent and Hellyer, of London. The site is almost level, with a slight general fall towards the front.

BURDOCKS FAIRFORD



PICTURE EXHIBITIONS.

The French Gallery.

Those who care for the best school of modern Dutch painting have an unusual opportunity at present of seeing, at the French Gallery, 120, Pall Mall, a collection of works by two distinguished painters lately deceased, William Maris and J. Bosboom; about 30 works of each. Of W. Maris it is unnecessary to say a word to those who have any knowledge of modern painting. Bosboom is less well known, and his talent is possibly a little exaggerated by his admirers, but it may be mentioned that he is exclusively a painter of architectural subjects, chiefly the interiors of Dutch churches, and his paintings have high excellence and a character of their own in this class of subject. An opportunity of seeing so many of them together may not soon occur again.

The Goupil Gallery.

We are hardly surprised to find that the enthusiasm that has been got up in the daily press over the works of Mr. William Greaves, as a great unknown artist, is a good deal overdone. Mr. Greaves's etchings are indeed admirable, and show what a true follower and pupil of Whistler he was; but his oil paintings, though there are some good effects among them, such as "Passing under Battersea Bridge" and the large impressionist sketch of Hammersmith Bridge on boat-race day, are for the most part by no means worth the stir that has been made about them. There is a foolish fashion among art-critics now of going into raptures over every newly discovered artist.

COMPETITIONS.

Public Baths, Sale.

In this limited competition, twelve designs were submitted, and the assessor, Mr. J. H. Woodhouse, F.R.I.B.A., awarded the first place to Mr. W. H. Mitchell, Irlam Road, Sale.

Castle Street Improvement, Swansea.

The assessor in this competition, Mr. S. S. Reay, has made the following awards in this competition:—1. Messrs. Phillips and Vaughan, A.A.R.I.B.A., Prudential Chambers, Newport; 2 (£50), Messrs. John Cocker, A.R.I.B.A., and T. Harold Hill, A.R.I.B.A., Mossburn Buildings, Manchester. The first position carries with it a fee of £250 for certain work in connection with the scheme.

LIST OF COMPETITIONS OPEN.

MAY 26. LABOURERS' COTTAGES, BURSTOW.—The Trustees of Archbishop Abbott's School, Guildford, invite builders to submit competitive designs and estimates for the erection of a pair of semi-detached labourers' cottages, which they propose to erect on the Rookery Farm, Burstow. Designs, specifications, and estimates are to be delivered on or before May 26th to Humphry P. Smallpiece, Clerk to the Trustees, 138, High Street, Guildford.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

JUNE 2. BUILDINGS FOR SMALL HOLDINGS, NORWICH.—In connection with their forthcoming show at Norwich, the Royal Agricultural Society offer prizes of £25, £15, £10, and £5, for plans of houses

and buildings for small holdings. Address, T. McRow, 16, Bedford Square, W.C.

JUNE 7. CEMETERY BUILDINGS, MONKSEATON. Architects practising in Northumberland and Newcastle are invited to submit designs. Designs to Surveyor Council officer, Whitley Bay. Particulars from Augustus Whitehorn, 60, Savill Street, North Shields.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

JUNE 16. BUSINESS PREMISES CYMMER.—The Cymmer Co-operative Society, Ltd., are prepared to receive competition designs for the rebuilding of their business premises at Cymmer, Port Talbot, Glamorgan. £15 and £5 will be awarded to plans first and second in order of merit respectively. Block plan, sections, and conditions may be obtained on payment of 5s. (returnable on receipt of bona-fide plans), from the Secretary, Co-operative Society, Cymmer, Port Talbot. Plans must be received not later than June 16th.

JULY 7.—Secondary School for Girls, Northampton.—The Northampton Borough Education Committee invite architects practising in the borough or county of Northampton to submit, on the 7th of July next, plans for a secondary school for girls, to be erected in St. George's Avenue, Northampton. Particulars from Stewart Beattie, secretary, Education Offices, 4, St. Giles Street, Northampton.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

Gloucester and Stroud Technical Schools.

During the session now drawing to a close Mr. K. H. Read, the lecturer on building construction to both schools has arranged a visit to the Michael Dean Cement Works, Bathstone Quarries, Stonehouse Brick and Tile Works, Messrs. Price, Walkers' Timber Yard, Gloucester; New Hippodrome, Bedminster, Bristol.

The Usher Hall, Edinburgh.

It is probable that the King during his visit to Edinburgh will lay the foundation stone of the Usher Hall. Rapid progress is being made with the demolition of the building and clearing the site, and it is expected the foundation stone will be ready to be laid in July. Lord Provost Brown and the Town Clerk have had an interview with Lord Pentland, the Secretary for Scotland, and though the royal sanction has yet to be given to the royal programme, one of the proposals to be laid before the King will be that he should lay the foundation stone of the new hall. The date of the function is Tuesday afternoon, July 18, on the morning of which day the Levee will be held at Holyrood Palace. The programme for the royal visit also includes the opening of the Knights of the Thistle Chapel.

THE QUEEN VICTORIA
MEMORIAL, LIVERPOOL.

Some interest has been aroused in Liverpool by the publication in the "Daily Post and Mercury" of an illustrated article on the "Liverpool Queen Victoria Memorial: As it might be and as it is." The opinion was expressed that "the canopy spoils the whole thing," the grouped columns which support the dome shutting in the statue from view, while the roof casts a perpetual shadow on the face and figure.

Mr. Arnold Thornely (president of the Liverpool Architectural Society), on being interviewed, said: "No, I do not advocate the removal of the canopy. While the statue, by that means, would be fully exposed to view, the mere removal of the dome, pillars, and bases, and the raising of the figure would not end the matter. The balustrades would be put out of proportion, and there might probably be many other minor alterations required. This memorial, I am sorry to say, has been very much maligned. It has become the fashion to condemn it by people who know nothing about the subject. The memorial is really a very much better composition than people are apt to think. If the canopy be removed, the high buildings around, some of which may be before long re-erected still higher, would swamp the monument. I entirely disagree with the statement that 'No successful statue is covered by a dome.' There are numerous examples to the contrary, all showing that a canopy gives added dignity to a statue. I may mention the Hyde Park memorial to the Prince Consort and the Edinburgh memorial to Sir Walter Scott. It is a pity that the Liverpool memorial of Queen Victoria is not duly appreciated. If I remember rightly, the city asked specifically for a canopied statue, and the various designs submitted and premiated were all in that form."

Mr. Edmund Rathbone not only endorsed the proposed removal of the canopy, but suggested the gilding of the sculptured figures. "Liverpool is in large part, like all northern cities, dull and grey in tone, so that a vista of gold would be a pleasant relief. The introduction of a gilt dome here and there on a high building has proved acceptable. If the gold seems gaudy at first, you can be sure that the soot of the city will soon tone it down. When I have spoken to fellow-members of the Liverpool Architectural Society in depreciation of this canopy I have found a considerable support to my views. My idea is that the architects were tied down to a style, and not given a free hand, because the city standard of good taste remained in need of raising. You must have the general body of citizens imbued with good taste before you can expect them to formulate artistic demands."

Professor Reilly (School of Architecture, University of Liverpool) said he must decline to pronounce upon a proposal which was not official.

Several other architects adopted a similar attitude.

Major William Denton, a member of the City Council, who took a close personal interest in the experimental electric lighting of the statue—an effort which proved impracticable—said he hoped the suggested removal of the canopy would receive most careful consideration.

THE BUILDING OF HOSPITALS.

BY A. SAXON SNELL, F.R.I.B.A.

In his paper read before the Society of Architects last Thursday, Mr. A. Saxon Snell, F.R.I.B.A., who has had more than thirty years' experience of hospital building, dealt luminously with the salient principles and points of practice pertaining to this important special department of design and construction. His lecture was illustrated with a selection of plans, two of which are here reproduced (see pp. 523 and 524).

MODERN hospital planning in this country dates from 1858, when the Blackburn and (a little later) the Herbert Hospitals were built. Then, for the first time, the pavilion system was adopted. Previously the wards generally consisted of a number of rooms containing a limited number of beds, generally ranged on each side of an enclosed corridor. With but one external wall, this necessarily entailed absence of through ventilation, a matter which we shall see is of vital importance. The administrative offices and sanitary conveniences were all in more or less direct communication with the wards; and the materials and methods of construction did not differ generally from those of ordinary buildings for the healthy. These are the main points which mark the difference between the old and new hospitals, and to appreciate the importance of the change in these matters, we must look at the fundamental principles which actuated them.

The Fundamental Propositions.

Now, as a first point, I will remind you that a hospital is, or should be, designed first and last for the housing and cure of the sick, diseased, and injured; an elementary proposition too often overlooked, or not always realised in the building. We may start out with that ideal before us, but sooner or later other considerations obtrude themselves to its detriment. To see clearly how this proposition is to be realised, let us examine in detail the thing to be done and the condition under which it can be done.

Shortly put, all disease, sickness, etc., is disorganisation or temporary disarrangement of our bodily machinery. Cure is restoration or reorganisation. Our bodies are so wonderfully designed that, given fresh air, heat and water, they can effect their own repairs with but small outside help, the amount of which varies, of course, according to the extent of the disorganisation or injury. That outside help comprises mainly careful and skilled nursing and medical or surgical skill. If all these were, so to speak, on hand at all times, for use as required, hospital planning and administration might be simple and stereotyped; but as we can only obtain them in varying proportions, we have to adapt our systems and buildings to meet the circumstances. The author felt that some apology was due for thus stating these elementary propositions. The truth is that though one may have been engaged, as he had, for thirty or more years upon hospitals and buildings akin to and connected with hospitals, one is driven again and again to recall them if progress is to be achieved. If we are inclined to find satisfaction in the enormous progress achieved in hospital design, it is salutary to turn over the pages of Miss Nightingale's "Treatise upon Hospitals," published as long ago as 1863, and the works of De Chaumont and Galton. We shall quickly realise that we have not even yet put into practice all the lessons they taught us from their long

and close acquaintance with the realities of sickness and disease.

No doubt it is true that every one of us endeavours, and in part succeeds, in making each building we design an improvement upon its predecessor; but these improvements are too often in matters of detail only, and our satisfaction and absorption in them is liable to lead to forgetfulness of larger problems as yet unsolved. It is possible to improve and refine details of hospital design whilst losing sight of their practical purpose.

The really perfect hospital will be realised only when we can free ourselves from conventional ideas and try to get a true sense of the end to be achieved, and keep that end steadily in view. No one of us can hope to make a revolution, but each one of us can do something towards it if we have will and initiative.

One might multiply these abstract propositions indefinitely, but it will be more interesting to come to more practical matters. The author proposed, therefore, to give a general description of the buildings which go to form a modern hospital, and to deal in detail with the most important part, i.e., the ward unit.

The Site and Disposition of Buildings.]

The ideal site may be shortly defined as being in the open country, but within convenient distance by rail or road of the town or area from which the patients will mostly be drawn; a light soil overlaying gravel or permeable chalk sloping gently towards the S.E., and protected by hills or rising ground or trees from the N., N.E., and N.W. A good water supply should also be available, and facilities for disposal of sewage.

For special hospitals which depend upon the services of the highest medical and surgical skill, much has to be sacrificed to bring them within reasonable distance of the specialist's consulting room. The disposition of the buildings depends of course largely upon the shape and area of the site, and the only general rules we can make are that the ward blocks should be so placed as to be free from the traffic of the other buildings, and the noise and dust of a public highway, should not be shadowed by other buildings, and should have uninterrupted light and air.

For the plan shown, it was not by any means pretended that it was ideal; or, at any rate, it could only be so to the extent circumscribed by English limitations. In this country we do not appear to be able to allow ourselves the luxury of spaciousness and magnificence, which are quite common features of Continental public buildings. It has always been so, as witness the size and restraint of our cathedrals and castles as compared with those, say, in France. Our genius is confined to our country houses, than which nothing more perfect, or indeed approaching them, is to be found anywhere in the world.

In the case of hospitals, as seen in the several block plans shown by the author, it was notable how the Germans space

their ward blocks, and that they are one or at most two storeys in height only. One reason for our restriction in the matter of site is no doubt that in England so many of our buildings, and particularly hospitals, have been built and endowed by individuals, instead of, as abroad, by the State; and States, of course, have large resources to draw upon. The public or road approach should be on the north side, from which easy access is obtained to the administrative offices, leaving the ward blocks freely exposed to the south, south-east, and south-west.

Lodge.

Commencing at the entrance gates, we have a small lodge placed midway between two pairs of carriage gates. One of these entrances should be reserved for goods traffic, and should have a full-sized weighing machine on the inner side of the gates. It is always to be desired that carts bringing in coals, provisions, etc., should be weighed on entering and leaving for the purpose of checking. The lodge should be occupied night and day, and be in telephonic communication with the rest of the hospital.

Out-patients' Department.

Adjoining the lodge would be placed the out-patients' department, which should have separate entrances and exits into the road, and it should also be entirely disconnected from the other buildings. This is a point which is not always observed—indeed, cannot be, with some sites, especially in city hospitals.

Bearing in mind that dirt and disease are largely cause and effect, no patient is admitted to the wards of a hospital until he or she has been bathed and re-clothed in perfectly clean garments. This cannot be insisted upon in the case of out-patients, and it is obvious that dirt and disease germs to a considerable extent must be deposited in that particular department; and it is therefore best isolated.

The out-patients' department is too large to describe here in detail. It comprises a number of consulting rooms, each devoted to certain classes of disease and surgery, ranged round a large waiting hall. The main point to be observed in the plan is that the hall should be sufficiently large, along a long parallelogram to allow of easy classification of the patients. In large institutions it is customary to have smaller waiting or preparation rooms intervening between the hall and each consulting room, where patients can undress, if necessary, and otherwise be prepared for examination by the surgeon or physician.

It is also important to provide separate exit doors for the consulting room, and if it can be so arranged patients should not return to the main hall, but go directly into the waiting-hall adjoining the dispensary. This is very difficult to manage unless the consulting-room is lighted from the roof. It is so arranged at Charing Cross Hospital.

Casualty Department.

Adjoining, and indeed forming part of the out-patients' department, is the casualty department, which, for identical reasons, should also be disconnected from the main building. For this department it is essential to have easy and quick access from the public road, and it should be possible to bring a cab or vehicle almost to the door of the operating room, because fatal damage may be done to the injured person in removal. At Charing Cross Hospital the doors actually open on to the courtyard. Attached to the operating room would be a waiting hall for patients' friends, and a room or small ward for the injured after treatment.

Observation Wards.

Beyond this block is a smaller one for the observation of cases suspected of infectious disease, or such as may develop in the hospital itself. This building should have no closed communication at all with other buildings.

Isolation Wards.

In all hospitals a few rooms are or a small isolated building is provided for fever cases which may arise among patients admitted to the hospital for other diseases. It is, of course, better that such cases should be at once removed to an infectious hospital, but it is not always practicable. The planning and fitting of this building falls under the head of fever hospitals, which is a subject for a separate paper. It need only be said here that if one, however small, is attached to a general hospital, it should be absolutely isolated, with a zone at least 40 ft. wide all round. It should be complete with kitchen and nurses' quarters. The author showed the plan and section of such a building planned on the lines of the Pasteur Hospital at Paris.

Medical School.

On the right of the lodge are placed the medical school, lecture-room, etc., and beyond these the pathological department, museum, mortuary, and engineering plant house, etc. The medical school should contain, besides a large lecture theatre, smaller lecture rooms, museum, library, and students' studies. The students' recreation and reading room may be conveniently placed in the same building, though it is not altogether to be commended. They would be better placed in connection with the living quarters or hostel, if one is provided.

Mortuary.

A hospital mortuary should be something more than merely and severely sanitary.

"How wonderful is Death,

Death and its brother sleep

. . . so passing strange and wonderful"

sang Shelley; and even the meanest of us will always feel awed in its presence; always by instinct pay respect to the cold clay. It has always appeared to me a beautiful idea to make the mortuary a consecrated place.

For a hospital, this may be quite a small place if there is adjoining a large room, or preferably a mortuary chapel. It may be called or used as a "viewing room." Even in public mortuaries this is recognised, and it will be found, for instance, that in Marylebone bodies are placed in a building which is more or less a small chapel. In practice, bodies are placed in the mortuary proper, which is severely and coldly practical in its construction and finishings, with its wash-

able walls and floors, and ample ventilation. When friends or relatives come to see their dead, the body is brought into the viewing room or chapel, to spare them the gruesomeness of the mortuary. It has always seemed to the author that there should be a separate exit from the mortuary yard to the public road, as a hearse and funeral procession is not a cheerful sight for either the patients or staff. Attached to the mortuary, or in close proximity, is the post-mortem room and pathological laboratory. Both rooms must be severely plain, with washable and impervious walls and floors. The danger of blood-poisoning awaits the careless operator in these rooms. Pathological theatres are seldom used now. Instruction in pathology is given in the lecture rooms, and practical demonstrations are held with small classes.

Operating Room.

Every hospital must have an operating room; and its area and arrangement differ according to whether the hospital has or has not a medical school attached to it. In the former case, all that is required is a fairly large room, preferably square on plan, say from 200 ft. to 250 ft. in area. Its adjuncts comprise a small sink room, anæsthetic room, and sometimes what is clumsily called an after-recovery room, which is merely a small ward in which to place a patient immediately after an operation. Separate operating theatres are often provided, one to each surgical ward, partly to avoid carrying patients long distances and partly because distinguished surgeons differ so much in their ideas as to fittings, arrangements, etc. Otherwise, a more reasonable and economical plan is to place them all in one building, with their adjuncts in common. A very good arrangement may be seen at the London Hospital.

Administrative Block.

Coming now to the main range of buildings, we have in the centre an administrative block, which should contain the offices, kitchen, stores, etc., and beyond it, to the south, or even on the upper floors, the nurses' home may be placed. This is said with some reserve, as for many reasons the nurses' home is better separated from the hospital proper; and, indeed, it is a more ideal arrangement to place this block in its own separate grounds and out of sight of the hospital. No one who has not undergone the hard life of a nurse, surrounded on all sides by pain and suffering for many more hours than the British workman thinks desirable for his own work, can realise the relief of different surroundings and atmosphere.

The administration block contains all the rooms, offices, etc., used in the general administration of the hospital, commencing with the secretary's department, committee-room, medical officers' consulting-rooms, waiting-room for visitors, general kitchen, stores, matron's office, etc. Obviously, it is best placed in the centre of the establishment, and its planning is governed by an appreciation of the various uses of its several parts. It need only be said that the secretarial and office part should be well separated from the kitchen and stores department. It is general to make the main corridor the division between them.

Kitchen and Stores.

One large kitchen really suffices for a hospital. It is quite unnecessary to pro-

vide a separate one for the staff. In many hospitals a separate kitchen is provided for and placed in the nurses' home; but it is a more economical plan to have one kitchen only, and if the nurses' home is at a distance from the hospital, the nurses' dining-room may be placed in the main administrative block close to the kitchen. Except in the neighbourhood of large towns or cities, it is well to have plenty of storage room, as it is cheaper to buy goods in large quantities. In large centres, however, weekly or even daily deliveries are easily arranged for. Nowadays we use little or no coal in the kitchen for cooking, which is done almost entirely with gas and steam. Both kitchen and scullery should be well lighted and ventilated, and preferably by lantern lights. The walls should be lined at least 6 ft. high with glazed bricks or tiles. Floors are best covered with hard vitrified tiles with close joints. It is also well to bear in mind that rounded corners and skirtings are as necessary in these rooms as in the wards.

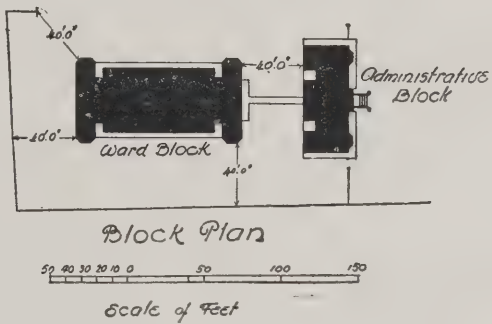
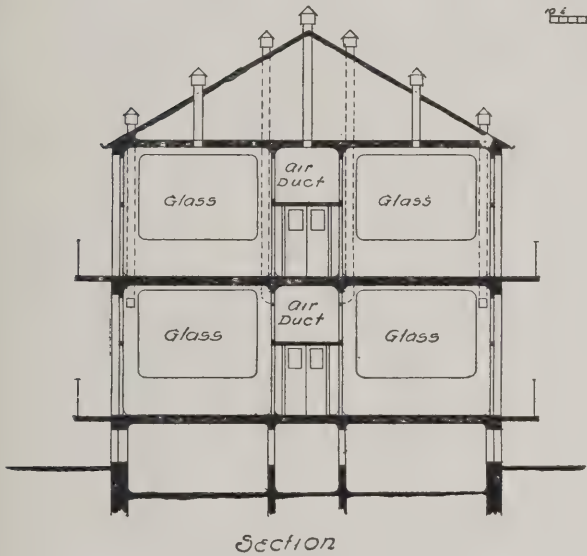
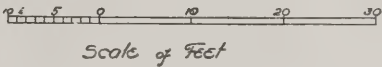
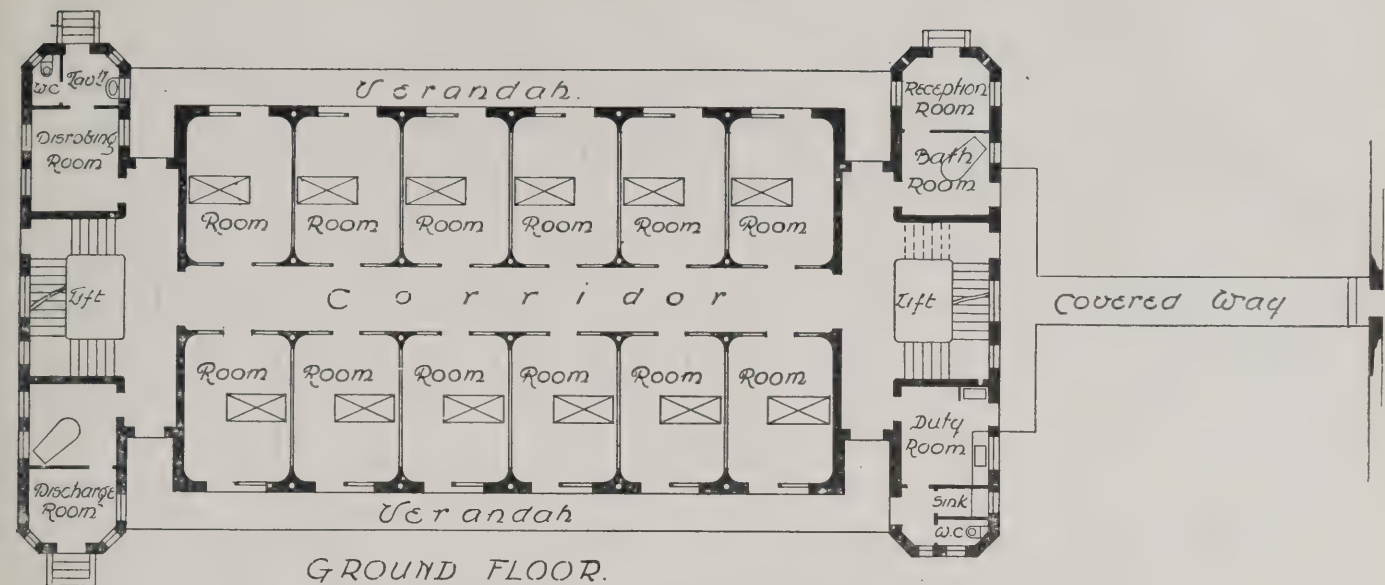
Boiler House.

In any institution larger than a cottage hospital, steam is essential for all kinds of purposes, from heating to sterilising; and a large and well-equipped boiler house is desirable. It is a great mistake for architects to overlook this important matter and to imagine that any small and out-of-the-way corner is good enough for the boilers and engineering plant. The department is best placed in a detached building, and so arranged that there shall be ample room not only for the necessary boilers and plant, but also that these can be renewed or replaced at any time without the necessity of pulling down buildings or walls. Plenty of boiler power is really economical. It is cheaper in the end to work a large boiler at low pressure than a small one at high pressure. Steam may be required not only for heating and cooking, but also for laundry purposes and electric lighting, and many small matters.

Ward Blocks.

Right and left of the administrative block are the ward blocks, each not more than two storeys in height and connected on the ground floor only by a broad corridor; although a connecting subway is useful, if it is not entirely necessary. There are differences of opinion upon that matter. The ward blocks should be so placed that the distance between them is not less than $1\frac{1}{2}$ to twice times the height of the blocks. This minimum distance is not often attained even in some of the finest hospitals, especially those in urban centres. Those responsible for the choice of sites have too often an indefinite idea as to the area required. The advice has been sometimes given that the area required was one acre to every fifty patients. That should be sufficient for ward blocks and administrative offices; but additional ground is required for the out-patients' department, medical school, etc. Once again we have to acknowledge that they manage these things much better on the Continent. Ample space is seldom wanting in French or German hospitals.

We have noted that sunlight and air are the two most important factors in the cure of sickness and disease. These are best secured by adopting the pavilion form of ward, and placing the axis approximately north and south. The east, south, and west walls are thus all exposed more



DESIGN FOR A FEVER ISOLATION HOSPITAL, BY A' SAXON SNELL, F.R.I.B.A.

or less to its rays at some period of the day, and every bed place along the walls has the benefit of sunshine.

I do not know whether anyone has, as yet, dealt with the relative value of direct and diffused light in sickness, but definite information on the subject will some day have a material effect upon the planning of wards. One gathers that direct sun's rays are the more powerful agent; yet south light, which, owing to the altitude of the sun, penetrates a building to a much shorter distance than east or west, is commonly regarded as the most valuable. This is not always obvious in view of the fact that it is a common practice to build wards of exactly the same pattern on both sides of the central corridor, so that the end window in one case faces due north.

Coming now to the internal planning of the ward block or unit, the author recalled that the usual number of patients varies from 24 to 32. The smaller number is more commonly adopted at the present day. The larger number was reckoned as the maximum which could be efficiently looked after by a ward sister and her complement of nurses. As in every department of life our work nowadays is more complicated and makes greater demands upon those who serve,

it has been found necessary to reduce this number to about 24 as a maximum. Of this number, 18 to 22 may be placed in the main ward, the remainder being distributed in small one and two-bed wards adjoining.

The dimensions of the wards are necessarily determined by the area and cubic space required by the patients. Apart from fever hospitals, that varies according to the views of different authorities and circumstances. One thousand to 1,200 cubic feet is, in the author's opinion, the minimum that should be provided in a general hospital, although in the purer and fresher air of the country seven or eight hundred is really enough, if more cannot be afforded. In the latest hospitals this amount is largely increased. In the new King's College Hospital, as much as 1,580 ft. will be provided.

Taking 1,200 as the minimum, and the height of the wards as 12 ft., it would allow 100 sq. ft. of area per bed. Twenty-four ft. used to be considered a sufficient width for wards, but 26 ft. is more general now. They are at times made even wider; but the author thinks this quite unnecessary. With a width of 26 ft., each bed would have a wall space of 7 ft. 6 ins., which is quite sufficient for most purposes.

It is usual to keep the head of the bed at least 6 ins. away from the wall, and

this allows a width of 12 ft. in the centre for stoves, tables, etc.

Stoves with open fires should always be placed along the axis of the ward. One fire to each 700 ft. is enough, if hot water pipes are provided in addition for really cold weather. The question as to central or descending flues is one mainly of appearance. One great advantage of central flues is that we are able to obtain good extraction flues for ventilation alongside the smoke flues. The best stoves are constructed entirely in brick or concrete, excepting only the grate.

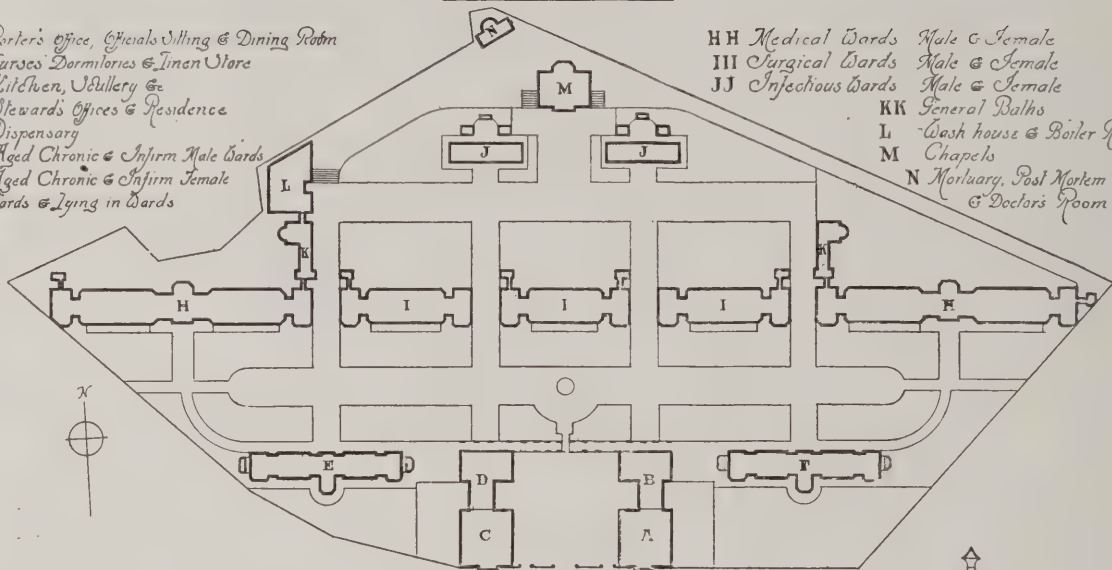
Ward windows have been the subject of much controversy, and the most useful form is a combination of sliding sashes and ventilating hopper. Great ingenuity has been expended in trying to obviate the obvious disadvantages this window possesses in the way of beads, internal angles, etc.; such, for instance, as making the sashes work in a groove, and building the frames flush with the internal surface. But none of them touch the real objection, i.e., the hidden parts of the cased frame. This is very typical of so many so-called sanitary improvements in fittings; all the surfaces and parts open to view are improved and simplified, but those out of sight are ignored, and it is only too possible for the internal parts to exhibit enough angles, wheels, and un-

:S^T Denis:Hospital:

:Near:Paris:

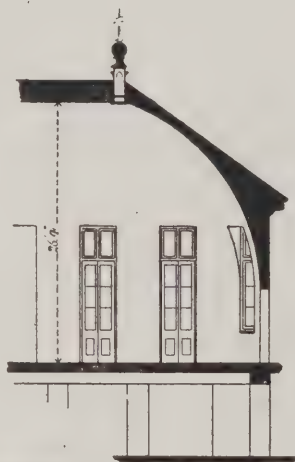
- A Porter's Office, Officials Sitting & Dining Room
Nurses Dormitories & Linen Store
B Kitchen, Buttery &
C Stewards Offices & Residence
D Dispensary
E Aged Chronic & Infirmary Male Wards
F Aged Chronic & Infirmary Female Wards & Lying in Wards

- HH Medical Wards Male & Female
III Surgical Wards Male & Female
JJ Infectious Wards Male & Female
KK General Baths
L Wash house & Boiler Room
M Chapels
N Mortuary, Post Mortem Room & Doctors Room

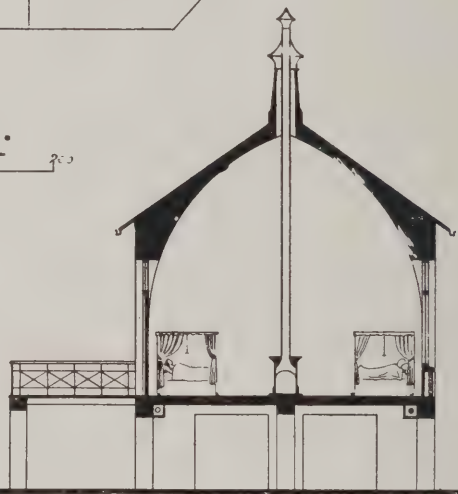


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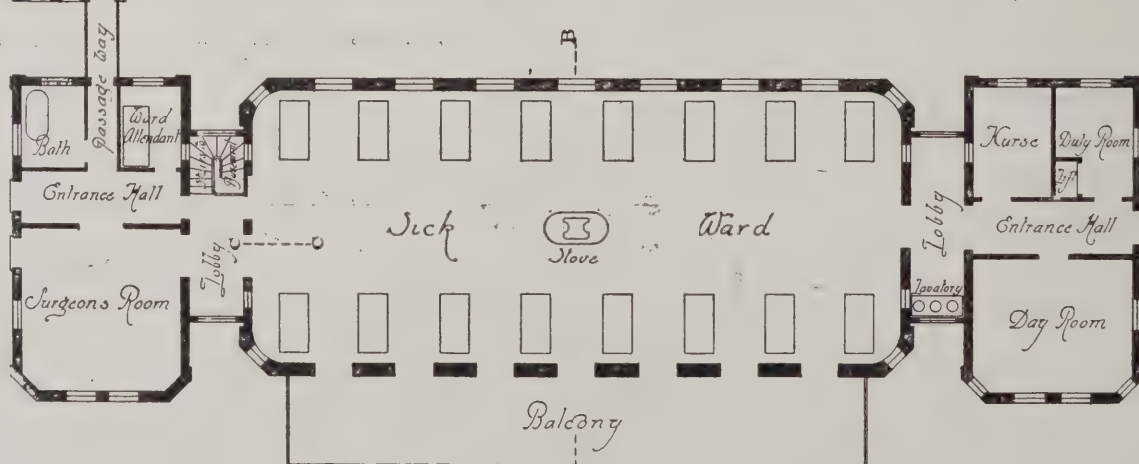
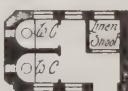
Scale of Feet



:Section:on:line:A:A:



:Section:on:line:B:B:



:Plan:of:one:Surgical:Pavilion:

Scale of Feet

desirable areas to harbour any amount of dust and dirt.

Returning to the subject of windows, it cannot be disputed that some form of casement in solid frames is really the best from this point of view. My personal preference is for a modification of what is known as the Middlesex Window, because it was first used at the Middlesex Hospital. At Charing Cross Hospital each window consists of a number of casements hung on centres and closing one upon the other. They are made in teak. At the Women's Hospital, Plaistow, they are made in steel; and this is undeniably the best material.

If all the details of construction of a hospital ward were to be dealt with, there would be room in this paper for nothing else; and the author must therefore content himself with the reminder that the floors should be of solid fire-resisting construction and covered with a non-absorbent and if possible jointless material.

Almost as important as the plan is the section of the ward block. Always bearing in mind that the more sun and air we get in and around the ward the better, it is well in the first place that it should not be overshadowed by other buildings, and, in the second, that impediments to free circulation of air should be avoided.

Tollet, with a logical thoroughness which is truly French, placed his ward blocks on stilts, so that the air should have free passage under as well as around it. Recollect that the atmosphere is continually in motion, continually passing up and down, continually being purified and revived in its motion. Check that motion, which is after all the essence of life, and it begins to stagnate. Tollet made the mistake, however, of raising his building too high, but only because the administration—forgetting the principle he had in view—found the space beneath the wards adaptable for enclosure as stores, etc. A height of from 4 ft. to 5 ft. only would prevent this; and still be sufficient to allow the free passage of air. Much less height would render the space difficult to keep clean.

The section of Tollet's wards is very striking. It is practically a Gothic arch; and the centre is no less than 26 ft. above the floor line. It provides an enormous volume of air in the ward; but inasmuch as experiments have shown that there is little movement in air of a room at a greater height than 12 ft., it seems excessive. An elliptical section rising to a height of 14 ft. is effective; and the author has been told that the ward he built of that section at Charing Cross Hospital is the best ventilated of all of them, and the one in which it is easiest to maintain an even temperature at all times. Obviously it prevents a violent deflection of the air entering the wards at the upper parts of the windows and ventilating inlets; and eases the passage of air up to the extract flues in the roof.

Bath Rooms and Lavatories.

The position of bath rooms, lavatories, and conveniences varies in practice, but it is most usual to place what are quaintly called sanitary towers at the extreme end of the wards jutting out at the corners. The author does not think it an ideal position, because, for one thing, it is just at those points that we are able to get the most and best sunlight, which these towers necessarily block out. These towers are separated by cross-ventilated lobbies from the ward. Mr. Aldwinckle, at the Brook Hospital, placed these offices

in a tower leading out of the centre of the ward, and this plan has its advantages from some points of view; but on the whole it seems that a better position (especially in a short ward) is at the lower end of the ward, adjoining the ward kitchens, etc. This leaves almost the outer wall surface and windows of the ward itself exposed to the sun without interruption.

It is most usual to place the baths in one of the towers, but this is, the author ventures to think, entirely unnecessary from a sanitary point of view; and they are more convenient placed adjoining the kitchen and offices. In this way it is possible to make the towers of small dimensions—a matter of great importance, in view of the obstruction they form to the light and air of other parts.

For this reason, too, and another, it is better to put the ward conveniences in one tower and the nurses' sink room in another. The other reason is that the nurses' work (at best not the most pleasant) is rendered easier and more agreeable. The special convenience for the use of nurses may also be well placed in the sink room tower. It should contain separate sinks respectively for emptying and cleaning bed pans without unnecessary handling; and also a long wide and shallow sink for washing mackintoshes. Also a small cupboard for preserving specimens of excreta for examination. This can be well placed in the thickness of the outer wall, and it should be thoroughly ventilated.

The air which is abstracted from the ward by open fires and flues must be replenished from the outside; and it will be drawn more freely through the openings which offer the least resistance to its passage. That may easily happen to be through the sanitary annexes; and it is, of course, the function of the cross ventilated lobby between the annexe and the ward to obviate this. Care must be taken that this lobby is not a mere flue between them, and that can only be done by making the passage of air in the lobbies easier than in the annexe. It is possible to make the extracting power of the annexe stronger than that in the wards, so that the draught is away from, rather than towards, the wards.

Although the author did not propose to deal at any length with the question of ventilation, he thought it necessary to state the general principles as applied to wards, because it has a bearing on the particular form of the pavilion block. He believes that ample and efficient ventilation can be secured in this country by means of open windows and air inlets. In placing the windows directly opposite one another, we can at most times get a gentle flow of air from one side to the other. In rough or cold weather, we have to rely more or less on the inlet flues, which are placed—one to each bed—in the outer walls. They discharge into the ward about three to four feet below the ceiling level. A little air may also be introduced at the floor level, the inlets being so placed that it impinges on and is slightly warmed by the radiators or hot-water pipes. This helps the general circulation of the air. An inlet or inlets may also be placed with advantage in connection with the central heating stoves. Very important is the provision for extracting the foul air which is given off by the patients. The most powerful agent in this direction is the open stove, but strong extraction flues at the ceiling level are of equal importance, and an induced current is valuable. The golden rule is to have

plenty of air, fresh and cold, but not too cold for reasonable comfort, and to keep it gently moving.

Day Rooms.

Day rooms for patients cannot be considered essential, but they are desirable. They are most often placed adjoining the kitchen and separation wards, where they can be kept under better observation by the staff. Much, however, may be said in favour of placing them at the extreme end of the ward where, with abundance of window space, they form veritable sun rooms. It is desirable that they should have conveniences adjoining.

Scullery.

The ward kitchen or scullery is an essential part of the ward unit. It need not be large if the door and window fittings are conveniently placed. A deep sink is provided with drainer boards and plate rack. Also a small cooking stove—preferably a gas range—for keeping food hot.

Separation Rooms.

One or two small rooms are very desirable to accommodate noisy patients or those for whom absolute quiet is essential. In a large hospital it is usual to provide one such room for two patients and two for one each.

Linen Store, etc.

To complete the ward unit we require a linen store room, broom cupboard, patients' own clothing room, and a small pantry. For these, space can be economized by providing a small cupboard in the outer wall of the scullery for food storage; cupboards along one side of the passage leading to the ward for linen, etc., and a cupboard in the kitchen for brooms, pails, etc. I prefer that the latter should not be placed in a closed space at all. They can be neatly hung on the wall of the kitchen. Cupboards are so handy for hiding dirty things. Patients' own clothes should, however, be placed in a small room fitted with steel lockers, pegs, etc.

Ward Sister's Room.

In large hospitals, a room is generally provided for the special use of the Ward Sister, but it should be in no sense a sitting or bed room. It should be more in the nature of an office.

Staircase and Lift.

If the ward block is of more than one storey, a staircase and lift are of course necessary. The stairs should not be less than 4 ft. in width and with an easy rise, say 6½ inches with an 11 inch tread. No winders should be allowed. The lift should be large enough to hold a bed and two nurses or attendants. It is desirable that the staircase should be cut off by a corridor or cross-ventilated lobby from the wards and adjuncts, so that the air from the lower ward may not be able to ascend to the one above.

British Exhibitors at Turin.

An advance copy of the list of British exhibitors at the International Exhibition at Turin, which was inaugurated by the King of Italy on April 29th, includes the following names that are in various ways familiar to readers of this Journal:—J. Bolding and Sons, Ltd., London, W.; Chance Bros. and Co., Ltd., Birmingham; Charles Constable and Co., Ltd., London, W.C.; Crosby Lockwood and Son, London, E.C.; Doulton and Co., Ltd., Burslem; and the Gas Light and Coke Co., Beckton.

CHURCH ARCHITECTURE AT
THE ROYAL ACADEMY.

Although there is a considerable collection of drawings of church architecture at the Academy, it is not for the most part very remarkable. Taking them in the order of numbering, we come first on the line drawing of a "Reredos for Otley Parish Church," by Messrs. Bromet and Thorman, of Tadcaster. This firm, as we have noticed in former years, always produce something original in treatment; this is no exception; it is a design in no accepted style, with a great deal of elaborate carving of intertwining foliage; but while we certainly do not complain of it for not following any special style, it seems rather to want the quality of *style* in an abstract sense; there is too much of the effort to be original, with the result of appearing rather eccentric. The same architects exhibit a clever pencil sketch for "A Sanctuary," with a window at the back with tracery treated in a manner of their own, and a straight-lined gabled head instead of an arch. It is the better design of the two; neither, at all events, is commonplace.

Messrs. Poulter's design for "St. Tarcisus' (?) Church, Camberley," shows a high gabled west front flanked by massive buttresses, and connected with the adjoining house (the Rectory we presume) by two arched bridges, one on each floor; that seems to be the intention; it makes an incident in the design, at all events. Mr. William Haywood's "Flèche for South Church, New York," though exhibited in his name, apparently is for a church by the well-known American architects, Messrs. Cram, Goodhue, and Ferguson, but bears the memorandum that it is "cast lead on a steel framework, from details and models by William Haywood," so that the architects seem to have left him to design the flèche, or perhaps gave a sketch from which Mr. Haywood (of Birmingham) worked out the construction and details. This is the most important drawing in the church architecture department, being a complete working drawing on a large scale of the elevation and section of the flèche, with notes on the strains and pressures involved. The portion of the section which is coloured like wood apparently represents the steel framing. The general design of the flèche is very satisfactory in proportion and in the grouping of the decorative detail; the little figures modelled in lead, symbolical of various Christian virtues, come in very well; but why, for the sake of Gothic precedent, introduce gargoyles, which in a construction of this kind at all events cannot have any meaning? The old masonry gargoyles were spouts, but they can have no such function on the angles of the flèche. In view of the possible effects of a gale of wind, we should have thought cross ties, at say two points in the height, would have been as well. It seems rather odd that an American firm of architects should have to come over to England to get a flèche designed and modelled; but it is a compliment to the ability of Mr. Haywood, who has produced a very good piece of work.

Mr. Walter Tapper's "School Chapel, Perth, West Australia," shows the normal English school chapel place, without aisles and with a vestibule across the west end; the pen-and-ink perspective shows an effective treatment of the flanking masses of buttress at the west end, which develop into crowning angle turrets a little squat in proportion. Mr. Burke Downing's

"Church of the Holy Spirit, Clapham Common," of which both exterior and interior are shown in large water-colour perspectives, with a small plan, is an experiment with the two-aisle church with a central arcade absolutely plain, with neither impost nor base mouldings, but it does not look bad; the exterior is brick with a plain stone bell turret; the south aisle is brought forward a little at the west end, so as to put the other one in a secondary position. The two divisions have pointed barrel-vaulted ceilings, coloured differently in plain colour, which is a good idea; apparently it is a design in which economy of cost has ruled, and as such is meritorious. Mr. Caroe's "New Chapel, North Eastern County School, Barnard Castle," is shown in a very fine Indian-ink brush drawing, but no plan; there is a good piece of solid masonry design in the manner in which the buttresses are all connected with the main wall by a cant at an angle of 45 deg., the arches over the windows dying against the canted face; a treatment in the true spirit of Gothic. The same architect also exhibits a drawing of the "Church of St. Ninian, Douglas, Isle of Man" (again without a plan), in which perhaps the peculiar heavy treatment of the tower has a reference to local style. Mr. Temple Moore does not do himself justice in sending such scrappy and unsatisfactory sketches of two of his churches, from which hardly anything of their design can really be made out. That is the kind of drawing we referred to in a former article, as being apparently hastily sketched just to find a place in the architectural room; but it is not the way to illustrate architecture to any good purpose.

"Additions to Caldicot Church," by Mr. Roland W. Paul (whose name is wrongly spelt in the catalogue), is hung too high to be seen; and Mr. Horsley's "Scheme for the Enlargement of All Saints', Hanley," though a plan is given, does not make it clear in what the enlargement consists. Mr. Ibberson's "Baptist Meeting House, Chorley Wood," is a design of considerable originality, though in a general way it reminds us a little of the style of church drawings with which Mr. H. Wilson used at one time to mystify the elect. It is not in any of the orthodox styles (which is a point in its favour); the west end shows small square-lined towers each with a long spout sticking horizontally from the centre of its eaves; there is a deep round-headed arch in the centre, apparently with a traceried window beneath it, and round-arched entrance doorways on columns; it is not very apparent what the material is—it might be a cement finish from the appearance of the drawing; but the whole is the reverse of commonplace. We meet with another rather original church in Messrs. Kelly and Dickie's "Church of St. Saviour, Lewisham"; this is a quasi-classic church, with a low-pitched roof projecting both at front and sides far beyond the walls, the sloping mouldings of the gable being returned on themselves at each side so as to form a horizontal piece of cornice sheltering a niche in the wall beneath, which might have a statue in it, though none is shown. The plan shows that it is what we call a "passage-aisle" church, i.e., with side-aisles merely wide enough to act as passages (the only way three-aisle churches ought to be planned in these days); above the aisles are buttresses in the shape of concave quadrants. This is a very simple building for a church, but it has character and originality.

BUILDING INTERESTS IN
SOUTH AFRICA.

(From Our Own Correspondent.)

Bloemfontein, April.

As I travel much in South Africa, my letter this month is addressed from the Orange Free State capital, Bloemfontein, where the annual Congress of the National Federation of Master Builders in this country is taking place. This important conference is this year dealing with questions of supreme interest to the whole building trade. Since the inauguration of the Federation, there has been a great awakening in the building industry, evidence appearing in various directions of a new spirit of achievement for the good of all concerned. The various Master Builders' Associations are in a healthy state; the various local Federations are active, and the National Federation, which embraces them all, is the one which, while I am writing, is in session. The agenda embraces many weighty subjects. A vital one is that regarding the employment of skilled coloured labour.

Prevention of Disputes Act.

Another important subject is consideration of the Prevention of Disputes Act (Transvaal), which is to be made applicable to all the provinces in the Union. Its peculiar effect seems to be the promotion of litigation, and in its present form it can only serve to manufacture discontent and estrangement between masters and men. Another important item to be brought before the Congress is the reorganisation of the Federation constitution, affiliation with the British National Federation of Master Builders being contemplated.

Brisk Building Trade.

Under the Union, building operations are undoubtedly brisk, and are being carried on throughout the length and breadth of the provinces on a small scale. The Government itself is responsible in a very large measure for the activity in the building trade. I have been able to gather together a few striking figures which prove the recent unprecedented activity throughout the whole country. The statistics have hitherto not been published anywhere, and have been collected by myself with great care. I find that in the total value of plans passed in 1910, the Transvaal shows an advance of nearly £2,000,000 over the preceding year. The figures are respectively:—For 1910, £3,412,571; and in 1909, £1,435,818. Natal figures jumped from £70,562 in 1909 to £277,961 last year; and the Cape Colony increased in 1909 figures from £100,647 to £242,725. The total value of plans passed for the four Provinces of the Union in 1910 (including £11,215 only from the Orange Free State) was £3,944,472, compared with £1,621,554 in 1909 and £1,068,492 in 1908 respectively. The most striking Transvaal figures for the past year are those of Johannesburg and Pretoria, owing, of course, to the large Government works now in progress. The Johannesburg plans were value for £1,345,760 last year, as compared with £688,434 in the preceding year. Pretoria made a surprising advance from £205,903 in 1909 to £1,121,407 last year. The great improvement in trade in the building industry is best seen if we look at the value of the plans passed for the last three years over the four Provinces, when we find that the grand total reaches £6,634,518. To these figures the Transvaal contributed £5,645,954; Natal £432,389; Cape Colony £503,098;

and Orange Free State £53,077. The comparative figures for the three years are respectively:—1908, £1,068,492; 1909, £1,621,544; and 1910, £3,944,472. The building trade never has been so brisk, and the present outlook is very encouraging and satisfactory.

Some Large Contracts.

A cursory glance at the building operations going on in some of the South African towns is educative, for we see many substantial edifices being erected which are most creditable from an architectural point of view. Few branches of the public service have been more badly housed throughout South Africa than the High Courts of Justice, but in no town has the provision been inferior to that at Johannesburg; yet the new buildings in process of erection on Von Brandis Square are now well advanced, and will be well worthy of the purpose they are to serve. They will be dignified, commodious, and well equipped in every respect. The town of Pretoria, which from the date of the Proclamation of the Union takes its place as the seat of the administration of South Africa, is a direct product of the evolution of Government. In the Transvaal the process of political development, which in older countries required hundreds of years, was run through in half a century, and the capital of the country was born out of and fostered by this rapid advance. It was marked out under Union régime for wonderful building enterprise. The building programme included a fine new Boys' College and Normal School; a grand new Post Office on Market Square, costing upwards of £130,000; a new railway station, badly required; and other great public works. All this, however, is dwarfed by the Union Government buildings, costing over one million sterling. This beautiful structure is making fine progress, and its site is a magnificent one on Meintjes Kop. Building in the suburbs is also going on steadily.

Trade at the Coast.

Coming to the coastal towns, we find the same encouraging briskness. Practically all the contractors in Durban, for instance, have their hands pretty full. An important work has just been commenced in the conversion of the old Town Hall into a General Post Office. On the beautiful Ocean Beach several large hotels are being erected. Durban contractors may well be contented with a long spell of work in front of them. Maritzburg, usually a quiet place, is also experiencing its share of building activity, a new University being built there. In Port Elizabeth right round to Cape Town, there are also the unvarying reports of a healthy condition in the trade.

Building Imports.

The imports of building material have naturally shown a very large increase. The total building articles imported during the ten months in 1910 was £2,197,088, compared with £1,289,802 in the preceding year. In every item there is a big increase. Cement imported shows an increase for 1910 over 1909 of over £47,000 in value. In furniture there was an increase of over £100,000, the figures for the past year being £260,501. A striking advance was made in the importation of iron and steel, the figures showing an increase in value of over £300,000, 1910 figures being £823,891 compared with £501,000 in 1909. Wood and timber show a rise of from £381,120 in 1909 to £726,172 last year, or an increase of £345,052.

NEWS ITEMS.

London's newest hotel—the Rembrandt, South Kensington—faces the Victoria and Albert Museum, and has been designed in French Renaissance style by Mr. Delissa Joseph, F.R.I.B.A.

A scheme for the erection of an Episcopal Cathedral for Aberdeen has been formulated, and a London architect has been consulted as to the choice of site. The probable cost of the scheme is estimated at £30,000.

Every member of Parliament has received a letter from the Royal Institute of British Architects in which the views and objections put forward by prominent artists, sculptors, and architects against the City's scheme for St. Paul's Bridge are outlined.

The name of the sole arbitrator in the claim of the Commercial Union Assurance Company, Ltd., against the London County Council, for compensation in respect of the premises at 55, Charing Cross Road, should, of course, have been given (p. 490 of last week's issue) as Mr. Howard Chatfield Clarke, F.R.I.B.A.

Mr. C. S. Spooner, F.R.I.B.A., will be among the speakers at the annual general court of the Incorporated Church Building Society, to be held in the small hall of the Church House, Dean's Yard, Westminster, to-morrow (May 18th) at 3 p.m., when the Bishop of Salisbury will take the chair.

Mr. Henry Holloway, of Messrs. Holloway Brothers, the eminent building firm, discussing with a representative of the "Morning Post" the general trend of the State Insurance Bill, is reported as expressing the opinion that employers generally would loyally comply with its proposals. There was little doubt, he thought, that some legislation on the lines laid down in the Bill had been necessary for some time.

The Architectural Association Athletic Club sports will be held on the new club ground at Boreham Wood, Elstree, on Saturday, May 27th, commencing at 2.30 p.m. The ground will on that occasion be officially opened, and a commemoration tree planted by Lady Webb, who will be supported by Sir Aston Webb, C.B., R.A., Mr. Arthur Keen, Mr. Gerald C. Horsley, and Mr. Henry Tanner. Particulars may be obtained from Mr. H. T. Benjamin Barnard, 82, Victoria Street, S.W.

The Municipal Council of Paris has set apart, from the important loan now realised (says the Paris correspondent of the "Lancet") a sum of 10,000,000 francs to be applied to the great improvements required in the hospitals and asylums. 300,000 francs will be devoted to the enlargement of the Central Stores of the Assistance Publique, 1,300,000 francs to the rebuilding "Lancet") a sum of 10,000,000 francs to be construction of the Hôtel-Dieu, 100,000 francs to Hôpital Broussais, 226,000 francs to Bicêtre, 155,000 francs to the Sick Children's Hospital, the reserve stores of hospital linen will be increased by 500,000 francs, 100,000 francs are to be spent in enlarging the sanatorium at Hendave, and 40,000 francs on a lecture hall at the new hospital of La Pitié.

Mr. A. E. McEwan-Waghorn, M.Q.S.A., surveyor, late of 1, Long Acre, W.C. has removed to 8, King William Street, Charing Cross, W.C. Telephone number, 4498 Central, as before.

Messrs. A. Marshall Mackenzie and Son (A. Marshall Mackenzie, LL.D., A.R.S.A., F.R.I.B.A., and A. G. R. Mackenzie, A.R.I.B.A.), architects, have removed from 13, Waterloo Place, to 1, Victoria Street, S.W.

Messrs. B. M. Boekbinder and Co., Ltd., artistic decorators, of Crown Place, Kentish Town, N.W., have altered their title to J. M. Boekbinder and Sons, Ltd.; this having been done with the object of identifying the business more fully with its founder, Mr. J. M. Boekbinder. The management and *personnel* of the business remain as heretofore.

The church of St. Jude-on-the-Hill, in the Hampstead Garden suburb, was consecrated on May 7th by the Bishop of London, when also a memorial tablet of beaten copper erected to the memory of King Edward VII. was unveiled by Princess Louise, Duchess of Argyll. The architect is Mr. E. L. Lutyens, F.R.I.B.A.

Excellent accounts are given of Dresden Health Exhibition, which was opened on May 6th. The "Times" Berlin correspondent thinks that "it promises to be of extraordinary value and importance," and that "Saxony will be able to congratulate herself on a master-work of scientific organisation, and on a unique representation of human health and disease in all their aspects nearly all over the world." A great deal of space has rightly been given to the illustration of the whole system of workmen's insurance in Germany. Tables and diagrams show the whole development of State insurance since 1885, and the voluntary insurance, as well as the organisations in particular trades and places. There are elaborate models of sanatoria, workmen's dwellings, and other products of the insurance system. The Imperial Insurance Office in Berlin has prepared a great display of statistical and other material covering the whole field of its immense experience.

DETAILS—OLD AND NEW.—VIII

Doorway at Stamford, Lincs.

"The Town of Stamford is remarkable for a large number of interesting later Renaissance houses." It is from two of these, situated on Barn Hill, that the doorway illustrated on the following pages is taken. An unusual curve is given to the pediment, although it is not without precedent, for a similarly shaped one is shown in Chambers's "Civil Architecture." The details are also remarkable. For example, the corona is very shallow and projects but little, so that the bed-mould is half hidden (only in true elevation) by it. Indeed, everything seems to indicate the refinement and originality of the designer. The effect of the curving of the flat soffit is extremely good, especially the way it opens up the soffit of the pediment itself. The same feeling is noticeable in the brackets, which, although shaped in a way typical of such things, are yet ornamented and diversified with something like originality.



DOORWAY, NO. 12, BARNHILL, STAMFORD.



NO 12 BARNHILL
STAMFORD Lincs

SCALE DRAWING WITH
DETAILS.

HALF PLAN LOOKING UP.

DOOR JAMB

SIDE ELEVATION
OF TRUSS

FRONT ELEVATION
OF TRUSS

GLASGOW EXHIBITION.

BY J. JEFFREY WADDELL.

It is with mingled feelings that one visits again the scene of the International Exhibition of 1901 in the fine West End Park of Glasgow. We miss the magnificent central feature of the dome and four towers, which were certainly fine enough to deserve a longer life; and the fact that the permanent Fine Art Galleries this time are outside the Exhibition grounds is a big loss; but against this we have to put the greater picturesqueness of the present buildings, and their distinctively Scottish character, which expresses well the particular object of this Exhibition, the endowment of a Chair of Scottish History and cognate subjects at the adjoining University.

The architects of the buildings are Messrs. Walker and Ramsay, who were responsible for some of the pavilions of the last Exhibition, the Wolverhampton Exhibition, and also the recent Edinburgh Exhibition.

The picturesque grounds of the Park, through which the River Kelvin flows, form an ideal situation for an Exhibition of this kind. As formerly, the main block, the Palace of Industries, faces Sauchiehall Street, its centre dominated by a large tower. One seems to expect a central entrance direct from Sauchiehall Street to this block, but, instead, the entrances are from side streets by gateways admitting not to any pavilion, but to the grounds.

The Scottish features of the architecture, the crow-stepped gables, the corner corbelled turrets, and the balustrades and minor details are pleasingly conceived, although executed in some cases with an exaggerated boldness which would be objectionable in a permanent building, and in the present building are sometimes unnecessarily crude. Of course, as becomes the title of the Scottish Historical Exhibi-

tion, an enormous number of thistles and ramping lions have been introduced, sometimes with very good effect, but occasionally out of scale. A fine feature of the Palace of Industries, however, is the music court, with its bandstand cleverly arranged as a back to the block of offices for the guests and officials of the Exhibition. A finely equipped tea room and garden occupies the upper floor adjoining the Music Court, and is decorated by

Mr. Charles R. Macintosh in his customary original style. One may not always like his treatment, but it is always certain to be thoughtful and away from the commonplace.

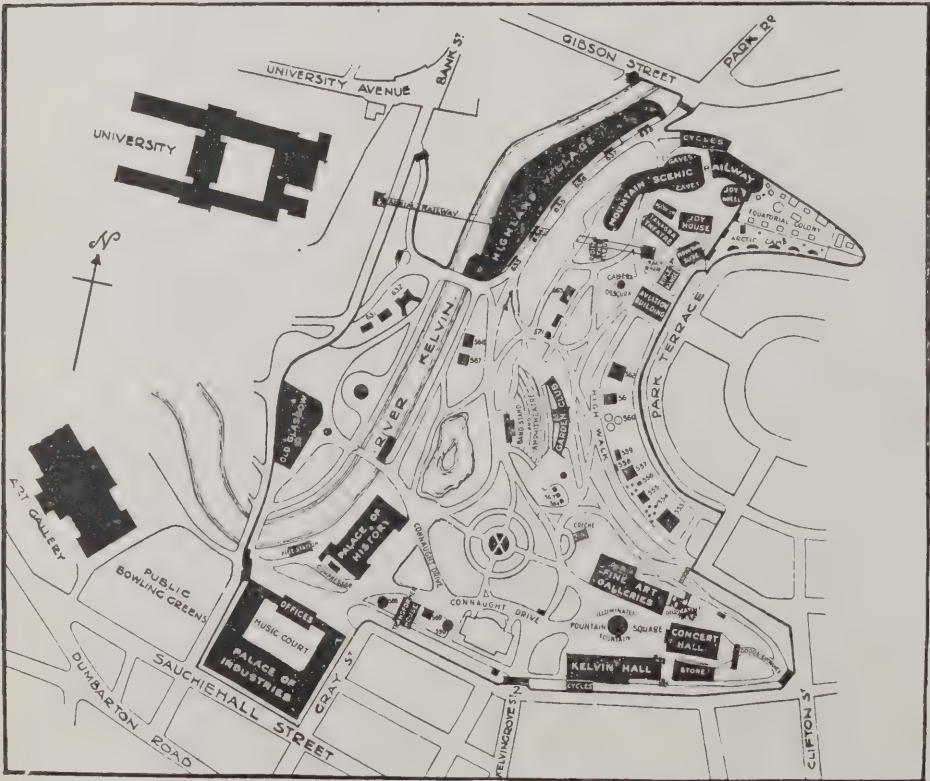
A spot or two of heraldic colour here and there enlivens the exterior and relieves the monotony of the cream white of the walls.

Inside the Palace of Industries there are some fine stands, such as that by the Carron Company, showing their very fine historic castings of grates, etc.; Doulton and Co., Pilkington and Co., Sissons Bros., and Shanks and Co. all show very fine exhibits, as do also a number of firms who show various articles connected with the building trades, such as ranges and grates, heating systems, marbles, paints, etc.

Opposite the Exhibition Offices, to the north, is the Palace of History, which is perhaps one of the most successful features of the Exhibition. It is modelled on the ancient King's Palace of Falkland, in Fife, and forms a most appropriate exterior to a splendid collection of historical works of art, including a very complete prehistoric section illustrating the homes of early man, the modes of sepulture, with cinerary urns, weapons, and, in the later galleries, pictures from the various periods of Scottish History. The development of architecture in the country is illustrated by a fine series of photographs of the ecclesiastical and domestic work from the earliest periods. It forms the finest object lesson on the growth of architecture in Scotland that we can remember to have seen, and is well worthy of a permanent place in the adjoining Art Galleries. The casts of fine architectural sculpture from historical buildings are also most interesting, and make an admirable field for study by the student. Every precaution has been taken to render this building, which contains



THE CONCERT HALL. WALKER AND RAMSAY, ARCHITECTS.



PLAN OF THE GLASGOW EXHIBITION.

so many invaluable works of art, fire-proof. It has even been deemed advisable to do without any artificial light so as to render the buildings completely immune from danger of fire. The same precautions, we understand, have also been taken throughout the Exhibition where any of the priceless works of art have been housed.

To the west of the Palace of History are a number of smaller stands and kiosks, a large refreshment stall, and then the machinery section, which is very appropriately named the Kelvin Hall. A number of exhibits typical of Lord Kelvin's genius are shown as a central feature of the hall, surrounded by exhibits by the best known of the industrial and engineering firms who have made Glasgow famous all over the world. This building has also been designed in a free treatment of the Scots Baronial style, for which the Palaces of Industry and History have prepared us. It forms the south front of a courtyard in the centre of which is an illuminated fountain, while east of it is the Concert Hall. Internally the Concert Hall is a great improvement on the circular hall of the last Exhibition; but externally there are a few imperfections, notably the entrance doorway, which is quite needlessly ugly. The tall clock tower, however, forms a pleasing termination to the vista extending from the Historical Palace.

Just north of the Concert Hall is a smaller pavilion devoted to Decorative and Ecclesiastical Art. The east end of the hall is in the form of an apse, and contains ten stained glass windows by various firms. Unfortunately, no uniform scheme seems to have been attempted, so that the result is not so happy as it might have been. Specimens of ecclesiastical furniture are also shown, including Communion table, chalice and paten, ecclesiastical robes, precious metal, wood, and ironwork, including chancel screens, one of which, by R. S. Lorimer, is particularly fine. This building also serves the additional purpose of showing in nine alcoves the allied decorative art works of the various art schools of Scotland.

Adjoining the Decorative and Ecclesiastical Arts Pavilion, and immediately north of the Kelvin Hall, are the Fine Art Galleries, where the architecture, sculpture, and painting from the beginning of the nineteenth century are shown. This building also has been designed in the Scots Baronial style, which lends itself very well to this temporary style of building, although in reality one of the most solid and substantial styles. The high-pitched turret roofs, with the crow-stepped gables, crenellated battlements, gargoyles, and block and cable enriched cornices make a very effective combination in the white fibrous plaster which goes to the making of the White City.

Inside, the collection of works of art is a very fine one, being second only to, if indeed it does not equal, that of the 1901 Exhibition, which was the finest collection ever brought together in this country outside of London. It has been drawn from the public and private collections both of Scotland and England, and gives a very good idea of the history of art in Scotland during the past two hundred years.

The exhibition of architectural perspectives and photographs in Gallery No. 10 is a very representative one, including exhibits from such well-known architects as Sir Rowand Anderson, Hippolyte J. Blanc, J. Burnet and Son, P. Macgregor-



THE PALACE OF HISTORY.

Chalmers, Cullen, Lochhead and Brown, A. N. Paterson, H. E. Clifford, and Fryers and Penman.

North of this gallery, on the rising ground, there are a number of smaller pavilions, including those of the Royal Scottish Arboricultural Society, Patersons Lighting, T. and R. Annan, etc. Below this high walk is the crescent with a garden club, another tea room of Miss Cranston's, and a restaurant, while immediately beneath is a large amphitheatre on the hill side, with an alcove bandstand on the lower level.

North of this again are the Highland Clachan (architect, C. Sinclair), the Aviation Buildings, and the usual side shows which one associates with the more popular side of an exhibition.

The lighting of the buildings and

grounds is by Messrs. Jas. Milne and Sons, and is by means of high pressure gas.

One should not forget to visit the Irish cottages and the square of rustic houses called "Old Glasgow," which are situated on the west bank of the Kelvin, and connected to the rest of the Exhibition by two wooden bridges. The latter consists of reproductions, with some necessary alterations, of old houses in Stockwell Street, Gorbels, Rottenrow, and High Street. These have been arranged in two squares, one round a "mercant cross," the other round an ancient "keep." The effect is very picturesque, and shows the possibilities of the architecture of our forefathers, and is most appropriate to a Scottish Historical Exhibition.

The photographs accompanying this article are by Mr. W. Alexander.



THE PALACE OF FINE ART. WALKER AND RAMSAY, ARCHITECTS.

CONTINENTAL NOTES.

The Late M. Louis Sortais.

Mr. Louis Sortais, who has just died, had in 1890 won the Grand Prix de Rome. He had designed the Hôtel de la Salamandre, in the Rue Rodier; ateliers and Rodin Museum at Val-Meudon; and a large amount of domestic work in the suburbs and the provinces.

Bonnier's Successor.

M. Guillaume Tronchet, architect-in-chief of Civil Buildings and National Palaces, has been appointed architect-in-chief of the Palace of the Elysée, in succession to M. Bonnier, who has become director of Services d'Architecture de la Ville de Paris.

The Pau Prefecture Competition.

The competition for the rebuilding of the Pau Prefecture has resulted as follows: 1 (10,000 francs), George Hennequin, Paris; 2, not awarded; equal 3 (3,000 francs), Camille Lefèvre, Paris, and Félicien Bailey, Saintes; mentions (1,000 francs), MM. Guidetti Paris; Godbarage, Biarritz; Bouten, Hauboldt; and Muzard, Paris; (500 francs), MM. Bertaud, Biarritz, and Ferrand and Gouley, Paris.

M. Chédanne and the Government.

The downfall of M. Georges Chédanne, Architect-in-Chief of Civil Buildings to the French Foreign Office, is attributed by his faithful friends to political animosity, rather than to the part he is alleged to have played in the public scandals which have created such a sensation in Paris. The temptation to share this belief is all the stronger considering to what eminence M. Chédanne had attained in his profession; and we note with regret that, as the result of enquiry, he has been relieved of his Government appointment. Born in 1861, he was in 1887 a pupil of Guadet, and in that year carried off the Prix de Rome. At the Salon, he won the third medal in 1891, the second in 1892, the medal of honour in 1894, the Prix Duc in 1900; and he was in 1900 also awarded the Grand Prix at the Universal Exposition. The many important works he has designed include the Elysée Palace Hotel, Riviera Palace Hotel at

Monte Carlo, the Royal Palace at Ostende, the Hôtel Dehaynin at Paris, the French Legation at Pekin, the French Embassy at Vienna, and that at Constantinople.

Unemployment Insurance—of Sorts.

They are a wonderfully methodical and systematic people, the Germans. Where the workmen refused to work on May Day, the employers penalised them by a lock-out from three to eight days. It therefore becomes desirable to make systematic provision against these contingencies. Accordingly, the employers and the workmen have each established a kind of provident or insurance fund, upon which they may draw in recompense of their respective losses, which regularly recur with each succeeding May Day. Perhaps this note may convey a serviceable hint to those British builders who are contemplating an all-round week's holiday in the summer. Why not establish holiday funds?

Les Amis du Louvre.

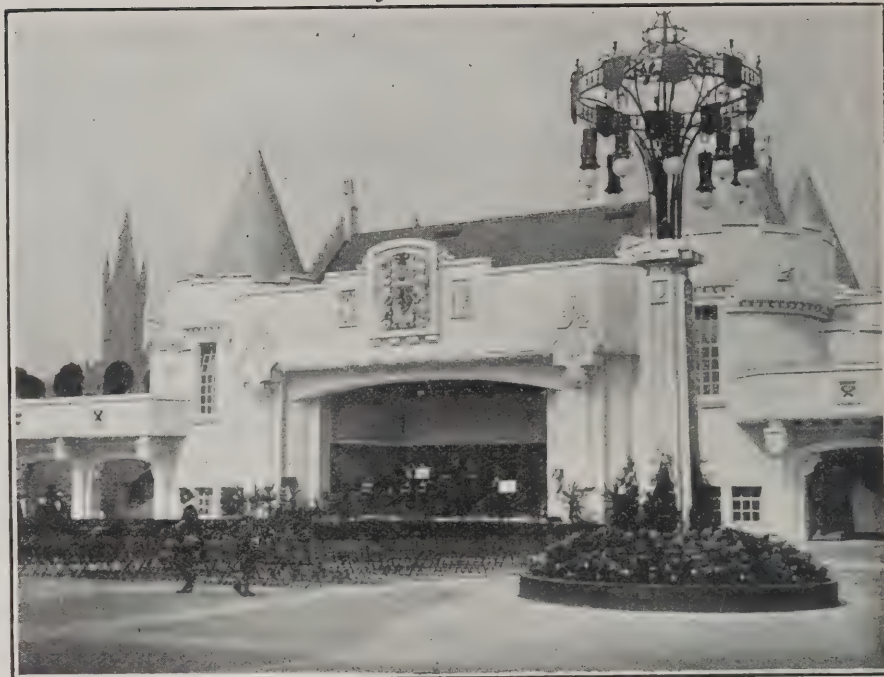
The presidency of the Société des Amis du Louvre having become vacant through the death of Count Isaac de Camondo, M. Raymond Kœchlin, vice-president, who is also one of the founders of the Union of Decorative Arts, has been elected to succeed him, while M. Fenailles has been elected vice-president.

Copper Pipes for Water Service.

The council of public hygiene and health of the department of the Seine has recently had under consideration the expediency or otherwise of conveying potable water through copper pipes. The Prefect of the Seine had been asked whether there was any objection to the employment of copper pipes in this service, and he referred the matter to the Director of the Municipal Laboratory, by whose advice the matter was submitted to investigation by M. Armand Gautier, of the Institute, who, after studying it from every point of view, has come to the conclusion that the substitution of copper for lead for service pipes is very desirable, and that it is no doubt only because lead is of lower price and superior malleability that it has been so long and so generally in use.

Vanishing Paris.

Railway extensions necessitate the immediate demolition of No. 84, Rue de Passy, at the corner of Rue de Pompe. This is a pity, as the building was, in the eighteenth century, the physical laboratory of the Château de la Muette, which was then a royal residence. Here Louis XV. and Louis XVI. were wont to study, and here lived and died the naturalist De Jussieu. With the buildings, some interesting architectural features will also disappear. An old hostel showing around its tall windows some fine specimens of wrought-iron work will be demolished; and the vigorous *mascarons* which adorn the façade will be greatly missed, especially one which represents a lovely laughing face, and for many generations has symbolised and asserted the joy of life. It is said that this ironwork has naturally been purchased by art-loving Americans.



THE MUSIC COURT AND BAND-STAND. WALKER AND RAMSAY, ARCHITECTS.



THE MERCAT CROSS AND GLASGOW HOUSES.

SOCIETIES & INSTITUTIONS

MANCHESTER SOCIETY OF
ARCHITECTS.

At the annual general meeting of the members of the Manchester Society of Architects, the report and accounts were approved and adopted, and the following officers and members of council were elected:—President, Mr. Edgar Wood, F.R.I.B.A.; Vice-Presidents, Mr. John Brooke, F.R.I.B.A., and Professor S. H. Capper, M.A., A.R.I.B.A.; Honorary Secretary, Mr. Isaac Taylor, F.R.I.B.A.; Assistant Hon. Secretary, Mr. J. T. Halliday, A.R.I.B.A.; Members of Council, Messrs. A. E. Corbett, John Ely, W. C. Hardisty, F. E. L. Harris, Francis Jones, jun., P. D. Lodge, Paul Ogden, Claude Paterson, J. H. Sellers, Gerald Sanville, J. H. Woodhouse, and P. S. Worthington.

The forty-seventh annual report shows that the aggregate membership is 282, comprising 108 Fellows, 117 Associates, and 57 students, being an increase of 14 as compared with the next preceding report. It appears that, at the request of the Manchester, Salford, and District Building Trades Employers' Association, the council considered the necessity of including in all provided sums something to cover the services rendered by the general contractor where the work is done by a specialist. The council passed the following resolution: "That architects be advised to make it clear in bills of quantities that the contractor is to add his profit in provisional sums included in quantities." In response to a communication from the R.I.B.A., the council has generally approved the scheme of the Worshipful Company of Plumbers with reference to the standardisation of plumbers' work. The council has held further communication with the Royal Institute with reference to architects' liability for dry-rot. The Society has contributed nearly £250 to the funds in aid of the further endowment of the Manchester School of Architects, and is endeavouring to increase the amount to £300. The reports of seven various committees are included.

The programme of summer visits and prize competition has just been issued by the Society. The visits are as follows:—Tuesday, 9th May, Calico Printers' Association Building; Oxford Street, Messrs. Clegg and Son, Fryers and Penman, architects. (This visit is, of course, over, but is included in order to show the complete list.) Tuesday, 23rd May, St. Michael's Schools, Irk Street, Mr. Paul Ogden, architect; Ferro-Concrete Warehouse, Dyche Street, Mr. Isaac Taylor, architect. Saturday, 27th May, Liverpool—Students' Union Buildings, Professor Reilly, architect; School of Architecture Studios, Cathedral, Mr. G. G. Scott, architect; leader, Mr. Roger Oldham. Tuesday, 13th June, Wilmslow—Parish Church, Hawthorn Hall; leader, Mr. P. S. Worthington, M.A. Saturday, 17th June, Adlington Hall; leader, Mr. A. E. Corbett. Saturday, 1st July, Selby Abbey; leader, Professor S. H. Capper, M.A. Tuesday, 4th July, Manchester Diocesan Church House, Mr. John Brooke, architect; Congregational Church House, Messrs. Bradshaw and Gass, architects. Saturday, 29th July, Mobberley; leader, Mr. Isaac Taylor. Tuesday, 1st August, New Bank Premises, Piccadilly, Messrs. T. Worthington and Sons, architects. Tuesday, 15th August,

Messrs Edward Wood and Co.'s Ironworks, Ordsall Hall, Saturday, 19th Aug., Chester—Cathedral, Eccleston Church, the late G. F. Bodley, architect. 15th-18th Sept., London. Prizes, varying from £10 10s. to 10s. 6d., for the usual subjects are particularised.

LEEDS AND YORKSHIRE
ARCHITECTURAL SOCIETY.

The opening general meeting of the Leeds and Yorkshire Architectural Society's year was held at the Leeds Institute, Mr. H. S. Chorley, F.R.I.B.A., occupying the chair in the absence of the president, Mr. Sydney D. Kitson, F.S.A. Both the council report, read by the secretary, and the balance sheet, presented by the treasurer, showed the society's affairs to be in an eminently satisfactory condition, the total membership standing at 183, against 167 last year. The following gentlemen were elected to the council for the ensuing session:—President, Mr. Sydney D. Kitson, F.S.A.; vice-presidents, Mr. A. E. Kirk, A.R.I.B.A., Mr. Fred Musto, A.R.I.B.A.; hon. treasurer, Mr. R. Fielding Farrar, A.R.I.B.A.; hon. secretary, Mr. R. W. Thorp, A.R.I.B.A.; hon. librarian, Mr. W. Whitehead, A.R.I.B.A.; Messrs. G. F. Bowman, J. F. Walsh, H. A. Chapman, F.R.I.B.A., C. B. Howdill, A.R.I.B.A., J. C. Proctor, A.R.I.B.A., and, as associate member, Mr. J. H. Farrar.

GLOUCESTERSHIRE ARCHITECTURAL
ASSOCIATION.*Mr. Saxon Snell on "Baths and Washhouses."*

Mr. Walter B. Wood, President, occupied the chair at a meeting of the Gloucestershire Architectural Association, held at the Northgate Mansions, when Mr. A. Saxon Snell, F.R.I.B.A., delivered a lecture on "Baths and Wash-houses." Mr. Snell, in the course of his lecture, pictured the ideal baths of the future, which should include a lounge, gymnasium, library, picture gallery, etc., after the manner of the Roman baths of old. This, he said, might appear visionary, but, in view of the increasing interest that was being taken in municipal enterprise, was quite within the bounds of possibility. The lecturer dealt exhaustively with the question of the planning of public baths, and pointed out that in many cases insufficient attention was given to the choice of a site, an awkward site often resulting in costly planning. Although great improvements in planning baths had been made during the last twenty or thirty years, there was room, the lecturer thought, for further improvement; but in many respects the designer's hands were still tied by popular prejudice, which, he hoped, would disappear in time. Mr. Snell mentioned that he had that day visited the Gloucester Public Baths, and remarked that they were among the most conveniently and economically planned baths he knew. At the close of his lecture, Mr. Snell exhibited and explained numerous plans of baths and wash-houses carried out by himself and other architects, including plans of the Gloucester Baths, lent by the architect, Mr. J. Fletcher Trew. An interesting discussion followed, in which Messrs W. B. Wood, Fletcher Trew, H. W. Chatters, R. S. Phillips, and H. S. Davis took part. Next day, members visited the New Ladies' College baths at Cheltenham, by invitation of Mr. Saxon Snell, the architect.

THE SOCIETY OF ENGINEERS.

The Protection of Water Supplies.

Mr. H. C. H. Shenton, Vice-President, in a paper read before the Society on May 1st, dealt with the difficulties of deciding on standards of purity for water and of danger from pollution. Dr. Somerville's and Dr. Thresh's warnings as to the harmfulness of certain organisms other than those usually taken into account were quoted, and Dr. Russell McLean's warnings against the harmfulness of coli, Dr. Sims Woodhead's statement as to the impurity of chalk waters, Dr. McWeeney's coli standard, Dr. Rideal's comments on the coli standard, Dr. Houston's object in the purification of London water supplies, and Mr. Dibdin's statements with regard to coli were discussed.

The author stated that animal pollution was sometimes considered harmless, without any apparent justification, and Mr. Down's conclusions as to the harmlessness of farmyard pollution were given as an instance. Mr. Revell's opinion as to the relative unimportance of chemical and bacteriological tests for water was discussed, and the possible harmfulness of an absolutely sterile water was illustrated by Sir John Moore's statement at Dublin as to the nutritive value of certain bacteria in water, and by an instance of illness supposed to have been caused by the consumption of distilled water.

The pollution of supplies had been demonstrated recently by a great many authorities, including Mr. Baldwin Latham, who had drawn attention once again to the fact that typhoid germs could exist in the ground, a fact which had been proved by Dr. Robinson's experiments, which were confirmed by Dr. Sidney Martin, of the L.G.B. The author stated that Dr. J. W. Miller's paper on the Dangerous Pollution of Rivers was confirmed by the serious warning of the Joint Committee of both Houses of Parliament on the Water Supplies Protection Bill.

Statistics published by the New York State Department of Health proved that cities which had improved their water supplies during the period of ten years showed a typhoid death rate considerably diminished, while those which had not improved their water supplies during the same period showed no change in the typhoid death rate.

In the author's opinion, standards could not be adopted that would ensure safety from all possible dangers, including unknown causes, but standards could be adopted that would exclude such germs as were known to be harmful. For the rest, a risk must be accepted or ignored till the existence of anything harmful in the water was proved or disproved by the scientist. Such standards should be rigidly enforced. If the scientist would fix such a standard, the engineer could make water conform to it. The author also stated that the fact that waters could be purified did not afford any excuse for permitting pollution to occur. All possible sources of pollution should be excluded, or purified so as to be harmless where exclusion was impossible. Engineers could do away with all sources of danger as required by constructing new and better works of various kinds, but these must be of a character superior to what was now generally accepted. To do away with the sources of pollution would prove less expensive in the end than the present acquiescence in the construction or use of leaking sewers, house connections, drains, cesspits, and the like in places where pollution of the underground water supply was possible.

ENQUIRIES ANSWERED.

Buildings for Tropical Countries.

A correspondent writes asking where designs for buildings suitable for tropical countries can be obtained. Perhaps some reader may be able to supply this information.

Books on Architecture and Building.

A reader writes to point out an inaccuracy in a reply under the above heading on page 507 of our last issue. We mention Batsford as the publisher of Weale's "Dictionary of Architectural Terms," and the price as 5s. net. The publishers of this work, however, are Crosby Lockwood and Son, and the price is 5s. (not net).

Charge for Reinforced Concrete Lintels.

W.H.C. (London) writes: "In a building recently some reinforced concrete lintels had to be reconstructed. The lintels are as follows:—11 ft. 6 in. long and 4½ ft. by 6 in. in section; four, 19 ft. long and 14 in. by 14 in. in section each; all being 10 ft. 6 in. from floor level. The shuttering and strutting was reused in the work, the aggregate being cement 1, sand 2, and ballast 3. This firm have sent in a bill for £21, which does not include the reinforcements, which were supplied by another firm. The builder's original price was only £8 8s., in view of which the new charge appears excessive."

—Our correspondent does not furnish complete information—for instance, he does not say whether the lintels had to be plastered or whether there was any labour on the steel beyond just placing it in position. Neither does he say whether the work was a long way from a railway station, entailing any heavy cartage, or other possibilities of difficulties which might increase the cost of the work. But assuming that the lintels were made in situ, not plastered, that the steel had merely to be put in position, and that the work was in an accessible position, and the materials could be obtained at ordinary prices, we consider that the sum of £10 would be ample to cover cost. D.

Village Ash Closets.

R. AND S. write: "In 1908 some cottages were built on the outskirts of a village, and each cottage was provided with an ash closet constructed of brick with cement floor, tiled roof, a window to open, a small vault outside, 2 ft. by 2 ft. by 2 ft., with a shoot from below the seat, all built in brick and cement lined, with a cover hinged to lift up for the insertion of dry earth or ashes. The medical officer of health has reported to the R. D. Council that 'the four cottages were built in 1908 on the estate, and a type of sanitary appliance was put in which was about 80 years old; he thought the plans must have been drawn by somebody with no knowledge at all. Considering that the plans were approved by the council, is this statement justified? Is such an arrangement sanctioned in any standard work on sanitation? The medical officer is in favour of the earth bucket system. That is practically the same in principle, except that instead of the bucket having to be emptied twice a week, the vault only needs clearing about every month.'"

—The medical officer of health is to a considerable extent justified in his remarks; it is impossible to shelter behind an approval of the plans by the council, who may have had no power to reject them. So far back as 1873, a then stan-

dard work on hygiene says: "Where the midden-system is continued, it is essential that the pit should be small, in order to ensure frequent removal of the contents; that it should be water-tight, be roofed in, and have a sloping floor; and that it should be well ventilated, and situated at a safe distance from the house. It is not necessary that it be drained, for if the ashes do not keep the excreta dry, the system is a failure. But even when it is carried out with every regard for structural detail and management, the midden system will always be objectionable." Querist will be able to judge how far the system described conforms to this arrangement. There can be no question as to the superiority of the pail system, which, all things considered, is probably the best which has yet been devised for cottage sewage removal in rural districts.—G.

Cement Mixture for Steps.

EMERY writes: "I desire to use a mixture of emery and cementing material for the purpose of facing the treads of steps directly on to concrete or stone without the use of metal bars, and shall be glad of replies to the following questions: (a) Has such a mixture been used for this purpose? (b) Are there any firms carrying out this kind of work? (c) If I make and use my own mixture, am I likely to infringe any patent rights?"

—(a) Concrete paving and steps faced with cement and carborundum have been used in many important London buildings, notably in the booking halls and platforms of the Underground electric railways, where the traffic and wear are very heavy indeed. The result seems perfectly satisfactory, both in non-slipping qualities and durability.

(b) The Labours Paving, Ltd., The Island, Twickenham.

(c) It seems hardly likely that any patent rights exist, but, apart from this, it would be desirable to employ a firm with previous experience in carrying out such work. G.

SCOTTISH NATIONAL GALLERY
ALTERATIONS.

Edinburgh Dean of Guild Court has approved the scheme for reconstructing the interior of the National Gallery, Edinburgh, and making alterations on the north terrace and railings. The building was occupied by the Royal Scottish Academy and the National Gallery, the former now finding accommodation in the reconstructed building fronting Princes Street. The new scheme combines the two suites of galleries, with access from a central entrance, and a new entrance hall, the two old side entrance halls being utilised for a display of black and white drawings and prints respectively. Immediately over these two rooms are situated two new galleries, reached by a staircase from the entrance hall. A new connection has been formed at the north end between the two suites of galleries and a small connecting gallery at the south end. At the south-west corner, by the removal of the present house for the caretaker, a new large gallery has been formed, which will be the largest in the building. Accommodation has been found for the directors in the room previously occupied as the R.S.A. council room, while above this the National Gallery Council will be located in an apartment formerly occupied as the

R.S.A. library. The whole of the galleries are being redecorated, and the gallery in the east side is being provided with a new parquet floor corresponding to the one laid down on the west side. The lighting will be on an improved system, while the heating will be by means of central radiators concealed by settees. Electric light is also being introduced. The two small octagonal galleries in the centre of the building, which were known as the "cells," owing to the indifferent lighting, are to be improved in this respect. On the outside of the building an improvement is being effected by the removal of the railings, and a strip of ground will be thrown into the street. The cost of the alterations will be about £10,000.

EDINBURGH ARCHITECTURAL
ASSOCIATION.*Visit to Hopetoun House.*

Members of this association visited, on May 6th, under the leadership of Mr. Hippolyte J. Blanc, R.S.A., Hopetoun House, the residence of the Earl of Linlithgow, which overlooks the estuary of the Firth of Forth, three miles from South Queensferry. The original building is recorded as having been commenced in 1696, from designs by Sir William Bruce. Changes in succeeding years were numerous, and many years afterwards very extensive additions were made by William Adam. The style is of Renaissance type, and consists of a main block averaging about 100 ft. square, with slightly projecting wings about 80 ft. by 46 ft. Advancing beyond these wings, and connected to them by colonnades of open columns, are further wings on each side. The whole frontage presents a façade of about 450 ft., and, as laid out, the entire depth measures nearly 300 ft. The main buildings comprise basement floor, with three floors of rooms above. While the interior is most interesting as an example of dignified planning, the exterior is conceived evidently with a view to fine effects of light and shade. The interior does not quite carry out the idea of space and grandeur, the rooms, other than the four principal apartments on the chief floor, being of comparatively small dimensions. The decorations of the rooms are refined, indicative of the prevailing taste of the time, the chief influence being from the French characteristics of the period. The wings are appropriated to extensive stabling on the north side, and the grounds are laid out in French style.

Trafalgar Square Improvements.

Earl Beauchamp's National Gallery and St. James's Park Bill was issued on May 9th. Its first object is to make provision for the appropriation for the purposes of the National Gallery and of the National Portrait Gallery of certain pieces of land heretofore used for the purpose of St. George's Barracks. Part of this land is now vested in the Commissioners of Woods and part in the War Department, but under the Bill it will be vested in the Commissioners of Works. The other object of the Bill is to make provision for a rearrangement of interests as between the Government and the London County Council in respect to land which, in connection with the works and alterations at the new arch near Trafalgar Square, it is desired to incorporate in St. James's Park.

TRADE AND CRAFT.

Koh-i-noor Pencils.

Messrs. L. and C. Hardtmuth, Limited, recently received an interesting letter, with which was enclosed a piece of Koh-i-noor pencil, about one inch in length. This was the finish of a pencil which had given five years' service. The lead, the writer declared, had not broken once since the pencil was originally purchased. Fourpence is certainly a very moderate price indeed for a pencil of such enduring character. The makers of the Koh-i-noor pencil are also the manufacturers of the pocket propelling pencils (suitable for pocket or handbag), which are sold from 9d. upwards. Any good-class stationer can show a variety of these pocket pencils, which are filled with Koh-i-noor leads.

Coronation Decorations.

Doubtless, during the Coronation festivities many thousands of schemes of decorations for private houses and gardens will be employed. Schools, also, and similar institutions, will mark the occasion by some show of loyalty; and many shopkeepers will adopt more or less striking means of signalling their allegiance and attracting attention to their businesses. In many such instances, perplexity may arise as to whence the necessary materials for effective display may be obtained. A useful address is that of Messrs. Hyman A. Abrahams and Sons, 65, 66, Houndsditch, Bishopsgate, E.C., who are prepared to send special lists of red, white, and blue and other shields; garlands, lanterns, favours, bucket lamps, medals, medallions, pendants, flags, streamers, and other objects appropriate to the occasion; this extensive firm of dealers in fancy goods having been established more than half a century.

NEW OPERATING THEATRE,
CARDIFF INFIRMARY.

The new gynaecological operating theatre at Cardiff Infirmary, which was opened last week by Lady Aberdare, who had contributed the greater part of the total cost of £2,500, consists of the following rooms:—Operating theatre, sterilising-room, anæsthetic-room, surgeon's-room, testing-room, etc. The operating theatre has a students' gallery at the north end, separated from the table by a glazed screen the full length of the room. The heating of the theatre is by means of two sets of radiators, one set being heated by hot water and the other by steam, designed to raise in five minutes the temperature to 90 degrees, if necessary. The ventilation is simple, fresh air being introduced through carbolised wool behind the radiators and the vitiated air extracted by an 18 in. blade electric fan. One of Thompson and Ritchie's hospital operating standards is arranged to carry light over any part of the table during operations. The floor is of terrazzo, and the walls are lined with white Sicilian marble, in large slabs and polished. The ceiling is in Parian cement, and enamelled white. Interior painting is enamelled white, and the radiators are finished in aluminium paint. Arrangement is made for hosing down the operating-room, which falls to a sink outlet in one corner. The operating theatre is lighted by a north top light the full width of the building, in addition to end and side lights, and most of the case-ments are made to open. The steriliser-room is also lined with marble, etc., to

match the operating theatre, and is fitted up with steam sterilisers for dressings, dishes, water, and instruments, and a spare steriliser, worked either by gas or electricity, in case of the steam sterilisers being out of use. A hood over the sterilisers, with flue, carries away all steam. The operating theatre and anæsthetic-room are entered by sliding flush-panelled teak doors. All other doors in this building are of teak, and swing both ways to allow the surgeon to use his shoulder in opening instead of his hands. All angles of the building are rounded.

OBITUARY.

Mr. James Demaine.

Mr. James Demaine, architect, of Thornby Lodge, St. Peter's Grove, York, who died on May 6th, at the age of 68, was many years ago articulated to the firm of Messrs. Wm. and John Atkinson, architects, whose offices were situated in Lendal. He took a prominent part in the business when one of the members of the firm died, and on the death of the surviving partner Mr. Demaine became the principal. Later he took into partnership Mr. W. H. Brierley, of Bishop-barns, York, the firm being conducted under the style of Demaine and Brierley. Mr. Demaine retired several years ago.

The R.I.B.A. and the Society of Architects.

With reference to the amalgamation of the Royal Institute of British Architects and the Society of Architects, it is recalled that the Institute was founded in 1834, and obtained a Royal Charter in 1837. A supplemental charter, conferring, among other privileges, power to hold examinations and issue certificates or diplomas, was granted in 1887 by the Queen in Council. The Society was founded in 1884, and was incorporated in 1898. The number of hon. members, members, students of the Society is more than 1,000.

Two Valuable London Sites

A quarter of a million pounds sterling for an acre of land is the price paid in two sales which have been effected in the West End. One of the sites is the freehold of the old Globe Restaurant, Coventry Street, with four adjoining buildings in Rupert Street, and on this it is intended to build a superb electric theatre. The transaction is costing more than £100,000, and it is stated that £50,000 will be spent on the fabric of the theatre. All the money for the venture has been found in Germany. The other site is a freehold in High Holborn of nearly an acre and a half, which has a frontage of 300 ft. The purchase price was approximately £300,000. The Pearl Life Assurance have acquired the land, and are erecting their head offices thereon.

FEDERATION NEWS.

Nottingham and District.

On November 15, 1909, the builders' labourers gave a six months' notice requiring new working rules with the employers' association, the principal points of difference from the existing rules being an advance of wages of 1d. per hour from 6½d. to 7½d., and the dropping of all reference to any walking time rule. Meetings and correspondence took place on the proposals, and the matter was carried to the Nottingham Building Trades Conciliation Board without any agreement being reached on the main points. The men declined to carry the matter forward to the higher Conciliation Board, which they were quite entitled to do, but requested that their case should go to a Board of Trade arbitrator. The employers agreed to this course, and a joint application was made to the Board of Trade, and Mr. A. A. Hudson was appointed, and on June 9th, 1910, he came to Nottingham and heard the case. On June 13, 1910, the

arbitrator gave his award, fixing the rate of wages at 6½d. (the old rate). This result did not satisfy the men, and at first they were not inclined to carry out the award, but eventually decided to abide by it and seek a remedy by again giving notice for new rules. This notice was given on November 5th, 1910, and expired on May 6th.

Their present proposals include an advance to 7½d. per hour, and a walking time rule more restricted than the old rule, which had been agreed upon by the other branches of the trade. The employers' reply to this notice was dated December 22nd, 1910, and stated "That no new circumstances have arisen since the arbitrator's award of June last to call for any change in the working rules" between the two parties.

The Board of Trade returns giving the rates of wages paid all over the country show the correctness of the employers' contention that there is no justification for any advance, and that Nottingham builders' labourers are paid the top rate in the country, with the exception of two districts only—viz.: London and Wallasey—and that the present rate is higher than is paid in such important cities as Liverpool, Manchester, Sheffield, Bristol, and many other large industrial centres.

The building section of the Nottingham and District Trades Council has sent the following resolution to the employers' association:—"That in the event of the builders' labourers being on strike in the near future, the whole of the building trades refuse to work with non-union labour."

The employers' position is that they are at present paying a higher rate than many other towns much larger than Nottingham, and that the present depressed state of the building trade and the absence of any prospects of improvement in the immediate future renders it impossible to grant any increase in wages.—W. J. BARTON, Secretary.

Sunderland and District.

At a meeting of the Executive Council of Sunderland and District Association, held in the Board Room on May 5th, Mr. J. Morice Wright in the chair, the estimated income and expenditure for the current year was carefully considered, and it was resolved that the subscription for the current year remain the same as the previous year.

Messrs. Rule, Hadfield and Co., Sunderland, were elected ordinary members of the association.

The Northern Counties Federation invited the association to merge their local picnic in a Federation picnic, "A Tour Through Northumberland," on Thursday, July 27th. The invitation was accepted.

The representatives at the last quarterly meeting of the Northern Counties Federation having reported upon the recommendation passed at that meeting with respect to the proposed alteration to the dressed stone rule, it was resolved "That the matter be deferred for six months, after which period further consideration will be given to the proposal."

A letter from the Hartlepool Association was read with respect to putting the inter-trading rule into operation within the Horden District, and it was resolved to appoint a deputation to confer with the Hartlepool Association on the matter.

It was agreed that the following should be printed at the head of all stationery belonging to the association: "In considering tenders received from sub-traders and merchants, members are reminded that reasonable preference should be given to those who are members of the Association.—W. H. HOPE, Solicitor, Secretary.

The Tyne and Blyth Federation.

At the annual meeting of the Executive Council of the Tyne and Blyth District Building Trades Federation, held at the County Hotel, Newcastle-on-Tyne, on May 5th, Mr. W. T. Weir (Howdon) in the chair, Councillor J. T. Armstrong, of South Shields, was unanimously elected president; Mr. J. Simpson, of Blyth, vice-president; and Mr. William Brown, of South Shields, was unanimously re-elected honorary auditor.

The following Trade Committees were elected: Bricklayers' Trade Committee: Messrs. J. T. Armstrong, R. Heslop, G. Cocks, W. Brown, and J. Leighton. Joiners' Trade Committee: Messrs. W. T. Weir, S. Easton, W. Forster, J. Simpson, J. T. Armstrong, and J. Pelton. Stonemasons' Trade Committee: Messrs. J. T. Armstrong, W. T. Weir, J. Lant, J. Simpson, and W. Hutchinson. Plasterers' Trade Committee: Messrs. J. T. Armstrong, W. Ferguson, Stephen Easton, T. Anderson, P. Erskine, and R. Heslop.

The secretary presented his annual report, which dealt with the work of the association during the preceding year, for which he was thanked.

The question of the annual subscription was discussed, and a resolution thereon was passed.

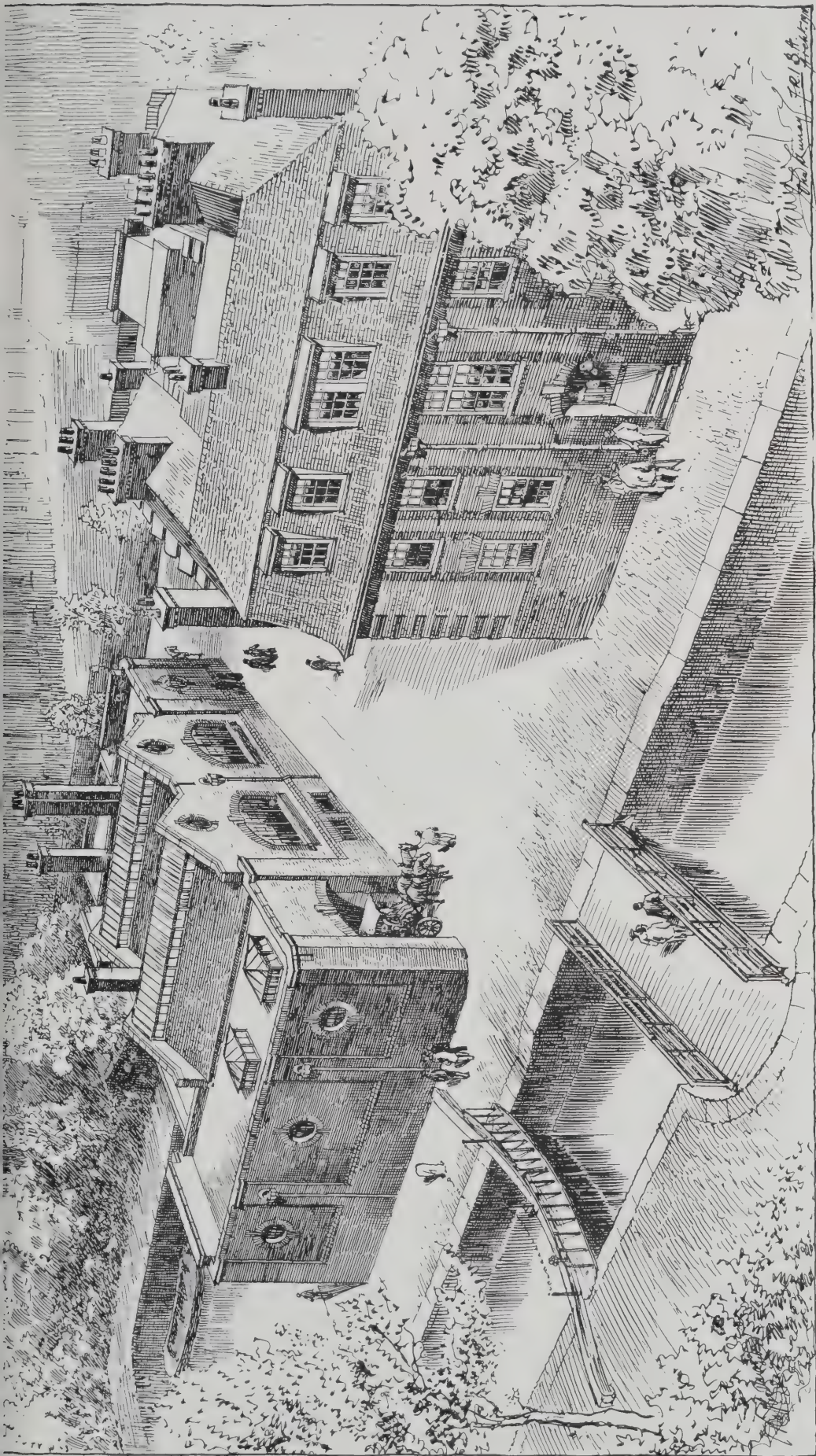
On the question of the proposed alteration to the dressed stone rule, and the action taken by the Northern Counties Federation, it was resolved: "That the rule in force within the Tyne and Blyth District Federation is practically the recommendation of the Northern Counties Federation, and that no action be taken by the Tyne and Blyth District Federation."

It was agreed that the Tyne and Blyth members should be recommended to fall in with the proposal of the Northern Counties Federation to hold their picnic conjointly on July 27th, the day following the general meeting of the National Federation at Newcastle.

A communication from the South Shields Association suggesting the adoption of a schedule of prices of day work and material was discussed, and it was resolved: "That enquiries be made of the local associations to ascertain whether they have such a scale in force, and as to the desirability of drawing up a common schedule for the Federation."—W. H. HOPE, Solicitor, Secretary.



View from Chelsea Bridge Road.



Bird's-eye view across the Lock.

DISINFECTING STATION AND STAFF DWELLINGS, GATLIFF ROAD, S.W., FOR THE WESTMINSTER CITY COUNCIL. JOHN MURRAY, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 24th, 1911.

Volume XXXIII.

No. 852.



The choir of this church is in a gallery at the west end, and the fall in the site from east to west enabled the planning of a mortuary chapel under the church, at the west end. The pulpit, choir seats, and other fittings from the former church of St. Peter-le-Poer, Old Broad Street, E.C., have been re-used in the new church, which is faced with red bricks, with Douling stone window openings. Internally the walls are plastered, and the arcade and other stone dressings are in Corsham Ridge Stone.

NEW CHURCH OF ST. PETER-LE-POER, FRIERN BARNET.

W. D. CARÖE, F.S.A., F.R.I.B.A., ARCHITECT. II.



MADELEY COURT, SHROPSHIRE: GENERAL VIEW FROM THE SOUTH-EAST.
From "*The Domestic Architecture of England during the Tudor Period*," by Thomas Garner and Arthur Stratton.

THE ARCHITECTS' & BUILDERS' JOURNAL.

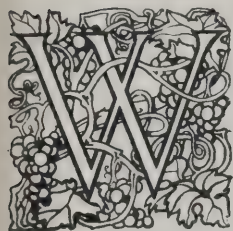
MAY 24th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 852.

NOTE: The List of Contents will be found on page IV. of the front advertisements.

Domestic Architecture of the Tudor Period.



WHAT constitutes an essentially domestic type of architecture? It is not the style of architecture which we associate with the class of buildings that are more appropriately called "mansions"; they represent a certain stateliness of living, which is reflected in the scale and the symmetrical design of the large residences of the

Jacobean and Queen Anne period, the mansion period *par excellence* in this country. There are great Elizabethan mansions, it is true, but they still retain a certain repose and quietness of detail which was lost after the Renaissance had taken possession of England. The ideal of domestic architecture, however, is found in the smaller English houses of the Tudor period, where symmetry in general was not considered, and where the grouping of the parts and the arrangement of the windows arose naturally out of the uses and convenience of the house.

It was to draw more attention to this phase of English architecture that the late Mr. Thomas Garner projected and to some extent prepared the large and important historical and illustrative publication which is now issued under the immediate authorship of Mr. Stratton,* who took up the work after Mr. Garner's death in 1906. We do not know that the domestic architecture of this period has been quite as much neglected as is implied in the preface; houses like Compton Wynyates, Ockwells, Laver Marney, etc., are in fact familiar as household words; but a great many houses are illustrated and described which are not very well known, and which represent admirably the type of domestic which combines picturesque architectural treatment with quiet and homelike character.

The arrangement followed has been mainly chronological, which is the best for purposes of study and for following out the development of the Tudor House. A general historical Introduction precedes the special descriptions, and contains much matter of interest. As an example of the use made of the grants of monastic properties by Henry VIII. towards the foundation of family residences, we read how Sir Thomas Wriothesley, Controller of the King's Household (afterwards Earl of Southampton), was delighted with obtaining the site of the Premonstratensian Abbey of Titchfield in Hampshire, and how "on the Sunday following its surrender the selling of marble monuments, altars, etc., out of the monastic church was accomplished, and a few days later an army of masons and carpenters was turned in to change the abbey into a grand mansion for Wriothesley's residence." The author adverts, we observe, to the curious indifference to the provision of an effective-looking and convenient staircase even in houses of which the external and internal architecture was lavish in decoration, and the rooms of ample size. The truth seems to

be that down to a rather late period of English architecture the staircase was regarded as a mere utilitarian accessory, a means of mounting to the upper storey, and no more requiring architectural treatment than a ladder, the corkscrew staircase hidden away in an angle being in fact little more than a more permanent and rather more convenient form of ladder.

In regard to the occasional appearance of classical entrance architecture in houses which present otherwise purely Tudor character, the author rather speaks (page 17 of the Introduction) as if these were contemporary with the rest of the building—attempts to introduce into it something of the type of detail which was elsewhere becoming fashionable. He instances Fritwell; but as far as can be judged from the photograph, without examination of the actual masonry, we should have no hesitation in concluding that the classical columns on each side of the doorway were a subsequent addition, having nothing to do with the original building. In the case of Upper Slaughter referred to in the same paragraph, it is admitted in the special description that the classically decorated porch was a later addition, but he seems to think



GREAT CRESSINGHAM MANOR HOUSE, NORFOLK.

From "The Domestic Architecture of England during the Tudor Period."

the Domestic Architecture of England during the Tudor Period: illustrated in a series of photographs and measured drawings of country mansions, manor houses, and smaller buildings, with historical and descriptive text by Thomas Garner and Arthur Stratton. Two vols. folio price £6 6s. London: B. T. Batsford; 1911.

the columns at Fritwell were original. They have not that appearance, in our reading of the photograph. The point is of some importance, because the special claim, made at the close of the Introduction, for this Tudor house architecture, is that it was thoroughly indigenous, as far as it went, and owed nothing to foreign influences, being based on the latest developments of English Gothic architecture, as in truth its whole general character testifies.

In fact, the illustrations in the book commence with what are simply Gothic houses of a late date; the Prior's House at Much Wenlock, and Great Chatfield. The same may be said of the George Inn at Norton St. Philip, for there can hardly be a doubt that the oversailing upper storey in half-timber work was a subsequent addition, with a view of gaining more room in the upper storeys, and that the upper part of the original wall was removed to make way for it. The Pilgrims'

of the old Abbey buildings, the adjoining work having been altered and modernised; and as this is one of the plates of which the author neglects to give a plan (perhaps because the present owners of the house objected), one cannot say what part it was of the original building; but the plate is a fine example of the quality of late Tudor architecture, and though erected as part of an Abbey, is eminently domestic in character; the treatment of the windows at South Wraxall is too well known to need comment. At Horham Hall we see again the fine effect of the one lofty bay, entirely glazed in four storeys of lights, which marks the position of the Great Hall, contrasting with the smaller proportions of the other windows. Among others of the finest houses illustrated in the first volume are Layer Marney (too well known to need comment); Sutton Place, Guildford; Cowdray, with its bay window of no less than six storeys of lights; Hengrave Hall; and



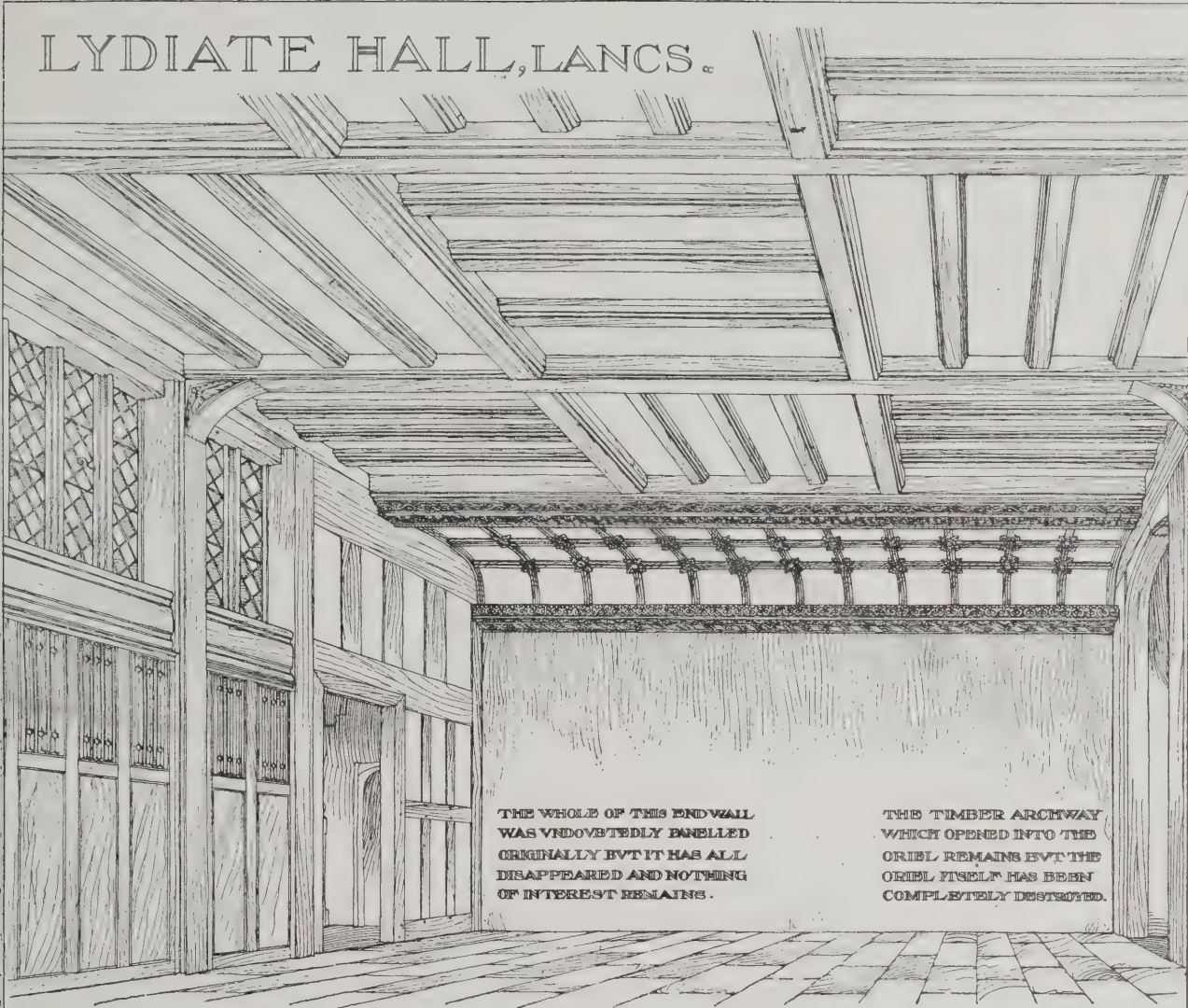
CHAVENAGE MANOR HOUSE, GLOUCESTERSHIRE: EAST FRONT, TO COURTYARD.

Inn at Glastonbury is a piece of pure and apparent untouched late Gothic, as is also the Guildhall at Cirencester. It is not in these complete Gothic fronts that the special character and charm of Tudor domestic architecture is seen; we see it rather in those houses in which the windows are spaced and grouped in a kind of unexpected manner, arising out of the arrangement of the rooms. The first example in the book of this kind of picturesque incident is in Grevel's House, Chipping Camden, where the two-storeyed bay window, with its gable at the top, and the panelling in the centre portion which connects the upper and lower window into one design, give so much character to the house. One of the finest examples in the book of the effect of window-grouping appears in the plate of part of Forde Abbey, and is very interesting on that account, though it does not in fact so well illustrate the effect of domestic grouping, as these windows are an untouched portion

Chavenage Manor House; the last-named a charming example of character in the spontaneous grouping of the windows; we give an illustration of this as one of the most characteristic bits of architecture in the book, and representing something of the homely character of Tudor domestic architecture, as Forde Abbey represents its more sumptuous type.

Among the illustrations in the second volume one of the most interesting and peculiar is the fragment of a building, for it is little more, known as Great Cressingham Priory, of which we give a reduced illustration. The decorative wall-panelling in brick and terra-cotta is an unusual feature; indeed, we do not know that there is any other example at all resembling it. The bonnet-looking roofs on the two octagonal projections are not the original covering, and the author says that the use of these turrets is rather a mystery, as they have no window openings, nor are there any remains of stairs

LYDIATE HALL, LANCs.



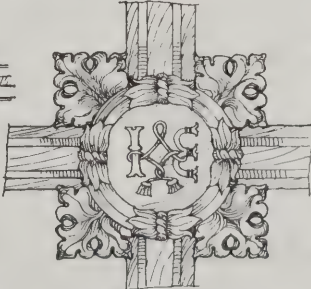
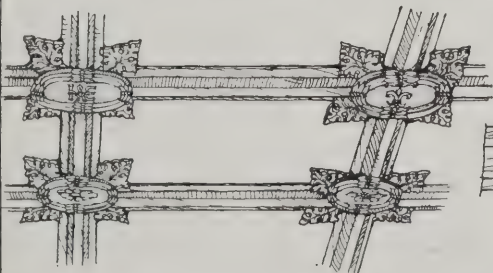
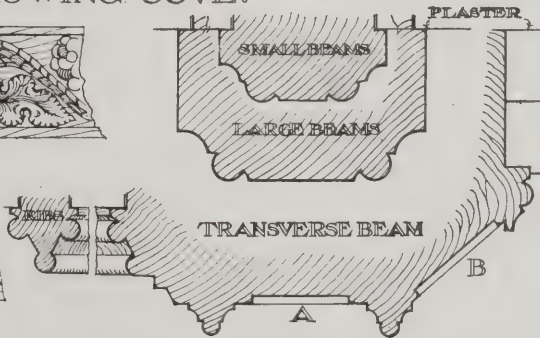
INTERIOR OF HALL SHOWING COVE.



CARVING ON BEAM AT B.



CARVING ON BEAM AT A.



OAK RIBS AND BOSSES ON COVE. DETAIL OF BOSS.

CORNICIE BENEATH COVE.



A. STRATTON, DESIG.
E. GARRETT, DEL.

From "The Domestic Architecture of England During the Tudor Period."

in them, which would have seemed to be their most natural object. The details of the wall panelling are given to scale on another plate. Among other illustrations in the second volume we may especially mention those of Loxley Manor House, in which, as an evidence of the gradual melting out of the Gothic style, the mullioned window compartments have lost their cusping, and terminate in round-arch heads (what the old text-books used to class as "debased Gothic"); Kingston Maurward Manor House, one of the **E**-plan houses, with a very simple symmetrical arrangement of windows; Newton Surmaville, near Yeovil, a fine front in which dignity is combined with simplicity of arrangement; and, on a plate devoted to "Gatehouses," the remarkable and picturesque Gatehouse of Little Leighs Priory (Essex), with its tall octagon brick-work towers with their angles emphasised by projecting shafts worked in the ordinary brick courses; this seems to be half ruined, but still preserves its beauty. It is noticeable that the turrets at the back are without the shafts at the angles, which were introduced to give greater dignity and importance to the front turrets. It looks, in the illustration, as if it were a singularly good and carefully built piece of brick architecture.

In addition to the general views of houses there are a number of plates of details; the bay-windows of Horham and Cowdray, for instance; many photographs and drawings of chimney-stacks; details of wooden roofs, bargeboards, paneling, etc., and of plaster ceilings. Besides these, the literary portion of the book, in which the historical descriptions are very full and well written, is accompanied by numbers of smaller sketches, plans, and odds and ends of interesting detail. As to the general get-up of the book, in regard to excellence of paper, printing, and illustrations, it is entirely worthy of the high reputation of Messrs. Batsford as publishers of architectural works.

Now, what is to be the special value of such a publication to the modern architect? It is a record of a very interesting phase of English architecture, and as such, of value to any architectural library. As for its practical use, it should not lead to any attempt to reproduce in modern houses any of the designs represented here. Such attempts are never successful, because these houses represent the spirit of the time, which cannot be revived with them. It should rather be taken as an education for the modern architect in the true spirit of domestic architecture; as showing that the true expression of such architecture lies in simplicity of design and detail; in a picturesqueness derived from the natural requirements of the plan; and in the absence of anything like pretentiousness or mere cleverness of detail. It is a book that should be studied, not to imitate anything in its contents, but to imbue the mind with the architectural spirit displayed in them.

French Art at the Salon.

THE immense Galleries of the Palais des Beaux-Arts contain the usual extraordinary evidence of one year's French activity and ambition in sculpture and painting; a show of annual art-work such as no other country in the world can produce. A good deal of it is, no doubt, crude and violent—sometimes vulgar; yet it may be said that the finest works of the year, in sculpture and painting alike, will always be found in the Paris Salon.

One of the differences that an English visitor notices is the amount of encouragement given by the Government to art. There is quite a long list of sculptures and pictures "Purchased by the State," or "Commissioned by the State"; some of them direct commissions for wall or ceiling pictures on a great scale; many of them purchased simply because they are good work, and distributed freely to provincial Museums and Mairies; a procedure which in England would probably be regarded as a sinful waste of public money. One large gallery is entirely occupied by M. Cormon's paintings for the ceilings and accessory panels of the two front wings of the Petit

Palais; this is the commission of the Paris Municipality, the Petit Palais being its permanent art museum. The ceilings are not very satisfactory; they symbolise French history by shadowy armies and battles in the clouds; but the illustrations of types of men of different periods, for the accessory panels, are very good; M. Cormon has rather a genius for realising the life of a past epoch. Speaking of the Petit Palais, we may mention that the ceiling paintings for the central dome, most of which have been seen at the New Salon, are now in position, and look very well and are quite intelligible from the floor, as long as you have the key to their intention. An immense ceiling painting by M. Besnard, for the Théâtre Français, is to be seen in the New Salon; in its present position on the wall it looks very violent in tonality, but may very probably look better *in situ*; its meaning, however, is a problem we cannot undertake to solve.

Taking the easel pictures *en masse*, there is no very great difference in the general aims of painting as illustrated at the Salon and at the Academy. In both there is about the same mingling of portraiture, landscape, and *genre*, along with serious studies of figure subjects which come under no distinct category. Mr. Orpen's "Man in Black" at the Academy is a kind of picture one might equally find at the Salon. There are, of course, a great number of nudes, some splendid pieces of technique, like Guay's "Far niente," some interesting for special style or quality; a good many very commonplace. The most interesting picture of this class is Robert Fleury's "Le Repos du Modèle," a picture in its simple sincerity of manner quite out of the usual run of pictures with such a title. But Robert Fleury (who inherits a distinguished name in painting) is never commonplace or trivial. M. Gervais (who must not be confounded, as he often is, with Gervex) has a fine decorative diptych of figures in Renaissance costumes, with a colonnade linking up the groups; a State commission, probably (as it illustrates "Amour Heureux") for the Salle de Mariage of some Mairie, for a Salle de Mariage must always be decorated with some painting appropriate to the occasion.

The New Salon, of course, shows a certain amount of experimenting in painting, grotesque enough in some instances, but this element is not so pervading as it used to be; and M. Lerolle's two paintings, one of which has been purchased by the State, are the very perfection of style in the combination of figure with landscape.

In portraiture, of ladies especially, the tendency of even the best French painters is to overdo the brilliancy of the costume, so as to make it seem almost as if it were the main object of the picture; except M. Humbert (the Gainsborough of modern French painting), whose half-length portrait of a lady is the finest portrait of the year, French or English. M. Aimé Morot has a more bright and expressive portrait group of two children. But it is in landscape that the French are so uncontestedly superior. They have an intellectual aim in landscape; they do not want so much to paint details as to evoke a poetic impression. As far as realism goes, indeed, Didier-Pouget's "Lande Fleurie" would make everything in the Academy seem weak; but a picture like Calvé's "Calme du Soir" soars higher than that; there is a greatness of style about it to be found nowhere but in French landscape painting.

It is to be feared that French sculpture is losing some of its old greatness under the influence of competition. The sculpture hall is so large and its contents so multifarious, that there is always the temptation to do something that will startle people; something that they cannot help looking at. The greatest sculptors, it is true, never give away to this; Mercier is as fine as ever in his grand draped figure, "Douleur"; Alfred Boucher can give intellectual interest to the simple seated figure of a girl under the title "Reverie." Even as things are, however, the sculpture that is of a high class would fill the Octagon and the Lecture-Room at Burlington House three or four times over. But it has to be extricated from among a good many violent and sensational efforts.

The New Zealand Parliament House.

FROM a copy of a New Zealand paper which has been forwarded to us, it appears that the Minister of Public Works in New Zealand is a good deal in need of enlightenment as to the best method of conducting a competition so as to procure the best architectural results, and as to the proper method of dealing with competing architects. The New Zealand Government appear to have instituted a competition for new Houses of Parliament, which is to be limited to architects practising in New Zealand, and under conditions which are not in accordance with the recommendations of the Institute of British Architects as to the conduct of competitions. In a deputation of architects to the Minister of Public Works on the subject, Mr. J. Hurst Seager, who acted as spokesman for the party, pointed out that, in the first place, the leading architects in New Zealand were members of the Institute of British Architects, and were bound by its recommendations, and would therefore be debarred from competing in any case. Moreover, it was pointed out that the Instructions to competing architects were exceedingly vague and badly drawn up, and left important points as to the requirements of the Government to the imagination of the competitors. This reasoning seems to have produced no effect on the Minister of Public Works (The Hon. R. McKenzie), who appears to be endowed with that fine contempt for architects which distinguished Mr. Ayrton as First Commissioner of Works in this country; according to the report of the meeting, he seems to have considered them hardly worth ordinary courtesy, and as to the recommendations of the Institute of British Architects, he merely informed the deputation that "he cared nothing about the Institute of Architects"; quite in the style of Mr. Ayrton. We have got past that kind of thing in England; it is regrettable to see it revived in a Colonial Government. The Christ Church "Press," in a leading article, criticises strongly the action and tone of the Minister, and moreover suggests that so important a public building should be thrown open for competition to the architects of the whole world, and not confined to New Zealand architects. That is a more debateable point; as New Zealand is architecturally a young country, there is something to be said for it, but we should not like it to be adopted in opposition to the feeling of the New Zealand architects themselves. At all events, it is quite certain that if it is to be a New Zealand architects' competition only, the conditions should be drawn up in such a manner that those architects who are members, and appear to be such loyal members, of the Institute of the mother-country, should be enabled to compete under its carefully considered regulations.

The Architect in India.

ON Tuesday last week Mr. John Begg, consulting architect to the Government of India, read an interesting and very well-written paper on the present and possible future of architecture erected under English rule in India. Until quite recent years, of course, the idea of employing architects to design buildings in India was hardly thought of; architecture, to the Government of India, was simply providing necessary buildings, and buildings were naturally the work of the engineers of the Public Works Department, familiarly known as the "P.W.D." One former member of that body, in the course of the discussion which followed, mentioned how he had received one day an order from headquarters to prepare designs for a Memorial Church at Cawnpore, the idea that such a work required something more than engineering knowledge not having apparently even occurred to the authorities. Mr. Begg did not, however, wish to criticise too hardly the work done under the P.W.D. system; on the contrary, considering that the world was full of amateur architects, he thought that those who had been called upon to act in that capacity in India had done much better than might have been expected. Mr. Stevens, who built, among other large works,

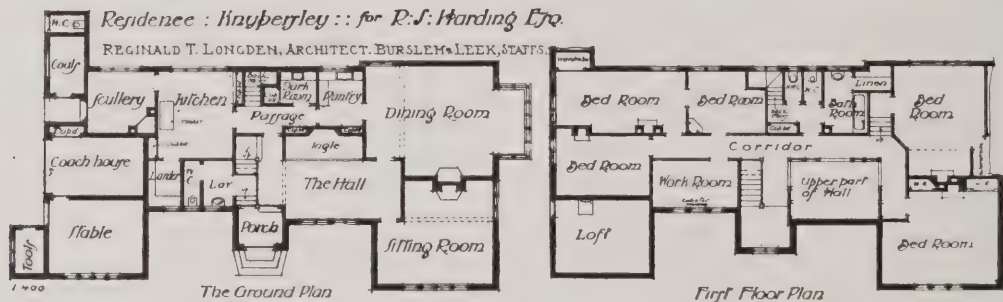
the Bombay railway terminus, he considered as hardly affording an example of official designing, as he was a man of genius. So he was, but it was constructional, not artistic genius; and we must say that the Bombay terminus (frequently referred to in the course of the meeting), however remarkable as a vast and scientifically constructed erection, is architecturally a piece of modern Gothic of the variety which, in the days of the Gothic revival, used unkindly to be called "Manchester Gothic." What style should be aimed at in buildings carried out for the English Government in India is a rather interesting question. When the Romans went into a conquered country they carried their own style with them; wherever the eagles went, there went the Roman triumphal arch, and the columned temple, and the arcaded aqueduct. As we have been rather like the Romans—a conquering race with very crude notions of art—it might seem that the architectural result should be similar. But we have begun to reason a little more about architecture now, and there seems to be arising an idea that Anglo-Indian architecture should be in a style coloured more or less by Eastern influences and local material. Mr. Chisholm, while in India, carried out some good buildings on this principle; Mr. James Ransome, during the last decade, has worked still better in the same direction, as the portfolio of collected illustrations of his works shows; and we gather from Mr. Begg's remarks that his convictions lie in that direction. The difficulties, according to his statement, seem to lie in the deficiency of English architects (there are only seven in the Indian peninsula at present) and the want of reliable assistants, the aspirations of the educated Hindu lying more in the direction of law than of art. The subject of Anglo-Indian style was hardly touched upon in the discussion, which was long and rambling and not much to the point; one Indian gentleman, indeed, had to be politely cut short by the Chairman, or he would probably be speaking still. That the only English architect, we believe, among the audience was not given any opportunity of expressing his views was possibly an oversight; the meeting was essentially an India Office function.

The Queen Victoria Memorial.

IT is a satisfaction to see the great group of the Victoria Memorial at last complete. Sir Thomas Brock (as we have now the pleasure of calling him) communicated to the Press a few days ago the idea which had been at the root of his conception of the monument. It was to have a wide base, in the first place, as symbolising the wide foundation on which the throne must rest; and the platform surrounded by walls containing fountains and basins of water symbolised the maritime greatness of the Empire. The reclining allegorical figures above the basins represent on the one side the Navy and Army, on the other side Science and Art. "To carry this idea further out, I placed on the pedestals flanking the steps at the front and back of the monument groups of colossal figures supported by lions—in the front, on the right, a figure of Peace, and on the left a figure of Progress; and at the back, facing the Palace, figures of Labour, Agriculture, and Manufacture. These, I felt, would represent all the qualities of the nation on which the Monarchy must depend for its security." These, however, are accessory figures only. Above rises the main feature of the monument, the central pedestal, terminating in a gilt winged figure of Victory, grouped with supporting figures of Courage and Constancy. In front of the pedestal is the seated figure of the late Queen, with a grand and broad treatment of the robes; on the left of the pedestal a group symbolising Truth; on the right a group symbolising Justice; and at the back a group representing Motherhood, symbolising the Queen's love for her people.

The result is a grand pyramidal composition, which as a whole is dignified and effective, and is, after the Albert Memorial, the greatest and most important national memorial ever

*Residence,
Knypersley:
for
R. S. Harding Esq.*
*Reginald T. Longden,
Architect, Burslem & Leek.*



This house has recently been erected at Knypersley, near Congleton, Cheshire. The site is on high ground, and the windows of the chief rooms overlook, on the south, the range of hills terminating at Mow Cop, and on the west a considerable portion of the Cheshire plain. The walls are of local bricks, rough-cast with large pebbles and cement, the roofs of hand-made sand-faced tiles, and the dressings of Alderney mottled stone. The entrance porch and the interior hall are framed of solid oak, plaster filled, and the joinery of the hall is also oak. The owner has furnished the house almost entirely with genuine old furniture. The contractors were Messrs. J. Heath and Sons, of Leek, and the architect was Mr. Reginald T. Longden, of Burslem and Leek.

erected in this country. As far as the principal portrait figure is concerned, it is vastly superior to the Albert Memorial; as far as the general sculpture is concerned we do not know that it is, for two sides of the bas-reliefs of the Albert Memorial, by Armstead, and one at least of the angle groups (Foley's "Asia"), represent some of the best work English sculpture has to show; much better, in fact, than is generally realised. In the Victoria Memorial the portrait figure is splendidly treated; the groups at each side are vigorous, no doubt, but strike us as somewhat too vigorous, too prominent and rounded in outline, giving a sensation of want of repose. The group of "Motherhood" at the back is the best of the three; the principal figure is very beautiful in design and expression. The central pedestal is architecturally rather weak in design; the flat pilasters and the details generally produce a whole which does not seem sufficiently strong and simple to form the centre around which so much large and vigorous sculpture is grouped. And as we were speaking of entasis in a recent issue, we cannot help remarking on the want of it here; the absolutely straight lines of the pedestal look too hard and rigid. Taking the monument as a whole, while some remarks have been made to the effect that it was too foreign in appearance, we should say on the other hand that it is too English—unmistakably English. It would be difficult to define exactly in what the

difference consists, but the manner in which French artists carry out a work of this kind has a quality about it which somehow in England we do not seem able to catch. In an artistic sense we think that the symbolical bas-reliefs at the back of the fountains are really the best part of the work; the most refined and reserved in style. The work, however, is a fine and monumental expression of the commemoration of a great reign; and one effect that it undoubtedly has is to emphasise the commonplace and feeble character of the façade of the palace which forms its background. This has already been the subject of comment in some of the papers, and may perhaps lead to a general feeling as to the desirability of supplying a finer architectural frontage to the principal metropolitan palace.

Cheaper Sanatoria.

IN the discussion of the Budget in the House of Commons last Wednesday, Mr. Balfour questioned the policy of applying large capital sums to the building of sanatoria throughout the country. He thought that too much was expected from this method of treatment, and that therefore it was possible to waste money upon vast, permanent, and ex

pensive structures. Mr. Lloyd George, in his reply, agreed that a short time ago too much importance was attached to sanatoria. He was told that in this country and in Germany, buildings costing at the rate of £500, or even £1,000, a bed had been erected, but he was assured that £100 a bed would provide equally good and even better buildings for the purpose. As these views of Mr. Balfour and Mr. Lloyd George are likely to make a very strong impression on the country, architects' ideas on the subject will necessarily be modified accordingly. It is evident that cheaper schools are to be followed by cheaper sanatoria, and the means of ensuring the latter are rather strongly suggested in the recommendations with respect to the former by the Departmental Committee, whose report was dealt with in the *Journal* of March 8th, at p. 251. In that report it was remarked "that buildings erected not long ago, which are still quite sound structurally, have to be extensively altered or completely remodelled, in order to adapt them to the organisation of an up-to-date school," and that "it would be rash to suppose that the process of hygiene and educational development has nearly reached its limit, or that this process will not continue to modify the planning of school buildings. The architect cannot afford to overlook the possibility of their being remodelled or even abandoned at some future date, which will involve some waste or sterilisation of capital expenditure. He will therefore plan his buildings on the simplest possible lines, so as to facilitate alteration of the internal arrangements." These observations seem to apply in great part with added force to sanatoria; and although, as Mr. Lloyd George was careful to point out, the costly buildings of this kind that have been already erected need not in any event be wasted, it is obvious that further adventures in this direction are not likely to be costly. It therefore devolves upon the architect to cast about for methods and materials which will enable this method of treatment to be pursued experimentally, and on the lines of development. Of course this modification of view is not altogether welcome. It would have been much more gratifying to know that the right type of building had been devised, that it was architectural and durable, and, above all, was effectual in the fulfilment of its great purpose; but although this gratification is denied us, we shall no doubt continue to do our utmost to assist in every way the great humanitarian movement which the sanatoria represent, and shall not selfishly regret the prospective diversion into other channels—say, those of extended medical research—of the "large capital sums" mentioned by Mr. Balfour as having been lavished on costly buildings. But while the building of large and expensive sanatoria is now likely to be abandoned, small and cheap ones will probably be multiplied.

PAINTED RELIEF.

BY R. ANNING BELL.*

PAINTING applied to relief-work is one of the most obvious and ordinary forms of decoration; but for various reasons very little work of a good class has been done in recent times. The architect, the sculptor, and the painter have specialised each in his own art in these later centuries, and have lost that comprehension of and sympathy with each other's work which characterised them in earlier and happier times, when their object was rather to produce a beautiful piece of work in collaboration than to express each of them his own particular talent apart and aloof from the others; but a reaction is undoubtedly setting in. The education of our art-students is now beginning to be directed by a wider and saner policy.

The architect, owing to the difficulty just mentioned of finding colleagues with whom he can work harmoniously, has been

driven to confine his efforts in the direction of colour to such simple treatments as he can trust to the ordinary artisan, and, as all who are acquainted with the British house-painter are aware, his experiences do not encourage him to attempt anything very unusual or ambitious.

Having shown why the treatment of relief by colour, once so universal, has to a great extent dropped out of use, the author assessed its value as a frequent element in decoration. The little work done in modern times is not sufficient to show how wide is its range and how varied are the effects to be obtained by it. He wished to speak of the sort of work with which he was personally acquainted—figure-work in relief, gilded or silvered and painted, and executed in fibrous plaster or some form of biscuit or terra-cotta. The work is essentially a colourist's work, and the first sketch must be as definite and careful as one for stained glass. The modelling gives the resulting work a carrying power much greater than painting alone can do, and it must be so treated as to leave a distinct edge to each colour-shape if the colours are strong; this particularly applies to areas which are to be covered with gold or silver. The relief need not be high, in which case the result is more akin, perhaps, to an embossed painting; but it may be so strong that the cast shadows from the larger forms have a prominent share in the composition. When high up, a broad treatment with simple flat planes, with but little modelling properly so called, may be used with good effect; but near the eye the author prefers to see the modelling quite thorough and searching. The modelling takes up much more time than the colouring, though the latter is the dominant factor in a successful result. Painted relief-work may be fanciful and gay, and it may be severe and sober and dignified. Opportunities for work of the latter kind have not been frequent, so that its powers in that direction have been by no means completely demonstrated, and perhaps the associations it brings to mind are rather of the frivolous order; but its possibilities for serious and architectonic decorative effect in churches or public buildings are as great as those to be obtained from any other method of wall-decoration. The author showed a reredos which he executed in this way for Park Church, in Glasgow, having a background of quiet blue mosaic. As to the colouring matter, gold or platinum and the usual artists' colourman's oil-paints are what he has always employed, and he saw no reason why these should not prove as durable on plaster modelled as on the grounds akin to plaster which are used applied to canvas for the ordinary easel-picture. He showed a small relief which had been for ten years over his own door, facing west and continually exposed to all varieties of weather: it is gilded and painted with cobalt-blue and other colours. It has, of course, faded in the strong sunlight—no blue can stand that—but under the conditions it has stood remarkably well, and, indeed, is rather improved than otherwise. He wished to emphasise the potentialities of this material for grave and rich and distinguished decorative treatment.

The author rather prefers the effect of a low-toned scheme—a sort of subdued gorgeousness which rich colour laid over gold so naturally gives, and particularly when associated with a good deal of black. In this way the effect will be "very broad, very simple, very stately, very strong in lines, not at all naturalesque, and not at all confused or jumbled up." Deep blues and greens and full-coloured reds, grave shades of brown or citron, ash-colour and purple, combined with a good "architectural" convention in the treatment of the figures, may be as readily attained in this material as in any other—by the man whose artistic powers lie in that direction. That, of course, is the essential condition for success. We shall find, as time goes on, many young artists arise who are quite capable of working with a true "architectural" understanding of the relation of their share of the work to the whole, and who, as colourists and as modellers, can act as true colleagues and assistants to the architect.

* Abstract of a paper read before the R.I.B.A. on Monday last (May 22nd).



THE NATIONAL MEMORIAL TO QUEEN VICTORIA IN FRONT OF BUCKINGHAM PALACE.
SIR THOMAS BROCK, R.A., SCULPTOR. SIR ASTON WEBB, C.B., R.A., ARCHITECT.

THE QUEEN VICTORIA MEMORIAL.

The Unveiling Ceremony.

The unveiling of the Imperial Memorial to Queen Victoria, by the King on May 16th, in the presence of the German Emperor and Empress, and members of the Royal and Imperial Families, and a brilliant assemblage of representatives of the home aristocracy and of the foreign powers, and a vast concourse of people, was the first great state ceremony of the completed Mall. The King, in the course of his reply to the address presented by Viscount Esher as chairman of the Executive Committee of the Memorial, said, "The Memorial itself, alike in beauty and situation, does justice to the art of the sculptor and the skill of the architect." After the King had concluded his speech, the Archbishop of Canterbury, assisted by the Bishop of London, conducted a dedication service. The Lord Mayor, treasurer of the fund; Sir Aston Webb, R.A., the architect; and Mr. Thomas Brock, R.A., the sculptor, were among those who had the honour of being presented to the King. Mr. Brock, having been presented, had moved away, when he was called back by the King, who commanded him to kneel, and having touched him on the shoulder with a sword, bade him rise Sir Thomas Brock. Sir Aston Webb the King has been pleased to appoint a Commander of the Royal Victorian Order.

Sir Thomas Brock on the Design and Execution.

Mr. (now Sir) Thomas Brock, R.A., communicated to "The Times" the fol-

lowing account of the genesis of his idea for the Queen Victoria Memorial and its development:—

"I believe that a meeting of the Executive Committee, after the preliminaries had been arranged, decided unanimously to ask me to undertake the work. I was sent for by Lord Esher and informed of their decision. They thought that they might thus get a work which would have more harmony and rhythm than they could expect if a number of sculptors were engaged upon it. I felt great diffidence in undertaking the commission, fearing that I might not be able to do justice to so great a theme; but I thought that at least I could try, and so I began my preliminary sketch model. It was intimated to me that the Committee would like me to travel for a year and examine the great examples of the monumental sculpture of Europe. I felt, however, that if I were to do so before having determined on a general scheme I should be somewhat bewildered on my return, and that the result would not embody the expression of my own personal feelings. This being so, I decided to proceed with my model, which was done to a very small scale, but was sufficient to convey a fair idea of my proposals.

"I felt first that I must begin by giving what I thought was the true foundation upon which the Throne must rest, and so it occurred to me that there should be a large raised platform surrounded by walls containing fountains and great basins into which the fountains discharged. This would suggest the maritime greatness of the Empire. This idea was further developed by the retaining walls being de-

corated by mermaids and tritons. It also appeared to me that this base should likewise be emblematic of the courage and wisdom of the people, which are suggested by the reclining allegorical figures over the fountains, on the one side representing the Navy and Army, typifying courage, and on the other side Science and Art, symbolizing intelligence.

"To carry this idea further out, I placed on the pedestals flanking the steps at the front and back of the monument groups of colossal figures supported by lions—in the front, on the right a figure of Peace and on the left a figure of Progress; and at the back, facing the Palace, figures of Labour, Agriculture, and Manufacture. These, I felt, would represent all the qualities of the nation upon which Monarchy must depend for its security.

"The central feature, which rises to a height of 82ft. above this foundation, I devoted entirely to those qualities which made our Queen so great and so much beloved. The statue of the Queen I placed in front, seated enthroned with Orb and Sceptre and looking towards the heart of the great city whose people she knew and loved so well. On the right of the great pedestal I placed a group of Justice, and on the left a group of Truth. I felt that she was just and that she sought the truth always and in all circumstances. At the back I placed a group of Motherhood, symbolizing her great love for her people.

"Above, ornamenting the main corner front and back, I placed eagles, emblematic of Dominion, and on the superb figures of Courage and Constancy; and

rising from above on an orb a figure of Victory with outspread wings, with the right arm uplifted and holding in her left hand a palm branch.

"The small sketch model of this Memorial was completed a few months after Queen Victoria's death in 1901. The fact that it had so far reached maturity became known almost accidentally to King Edward, who paid me the honour of a visit to my studio to inspect it. His Majesty was favourably impressed by the conception, and made certain critical suggestions to which I deferred, and which are embodied in the Memorial as it exists to-day.

"I then proceeded with a more elaborate model to a scale of one-tenth the full size. This was completed and approved by King Edward in the summer of 1902. It was then that his Majesty realized the magnitude of the work, asking me how long it would take to complete. When I mentioned ten years he replied, 'Why, we shall all be in our graves by that time.' I did not see my way, however, to name any earlier date, and as a matter of fact it is not more than nine years since the work was actually begun. I must now leave the Memorial to the judgment of my own and future generations, but I feel it incumbent upon me to say that whatever that judgment may be the entire responsibility for the work rests with myself; for no artist could have been accorded greater freedom or treated with more complete confidence than I have enjoyed at the hands of the Memorial Committee."

Criticisms on the Monument.

"The first and most important consideration in monumental art," a writer in the "Morning Post" observes, "is scale, the relative proportion to each other of all the parts. From no point of view should there be confusion in the architectonic filling of space. Near objects should not seem to be beyond those at a greater distance; the head of a seated statue, set on a height and seen from below, should not look as if it were merely an object resting on the lap of the figure. There should be between the two parts the suggestion of the unseen body. In art this illusion is produced entirely by mechanical means, by science which as someone said is measurement. Sir Thomas Brock in choosing the form of monument to Queen Victoria set himself a task of extraordinary difficulty. The figure of her Majesty had to be distinct, predominant, and the sculptor has insisted on this necessary predominance somewhat at the expense of artistic coherence. Viewed from the front the Queen is in perfect scale with the groups of 'Truth' and 'Justice' on either side. But when examined from the north or the south side of the structure all sense of perspective is lost. The symbolical figures referred to are actually nearer to the eye than is the statue of the Queen; yet her figure is so much larger in proportion that unity of design is upset. The figure of the Queen judged by itself is on the whole splendid. The upper part, in particular, has great dignity. The front face is, perhaps, a trifle severe for the great-hearted lady who for so many years ruled the British Empire by love and kindness, but in profile the features are noble and sympathetic. The Memorial is sure to be extremely popular. It comprises all the factors that appeal to national pride and sentiment, and they are presented with a power hitherto absent in British monumental sculpture."

Another writer in the same issue, after giving the following brief history of the

genesis of the monument, subjects it to somewhat searching criticism. "Mr. Brock's design," the "Morning Post" contributor recalls, "modelled on a scale of one-tenth full size, was approved by King Edward in 1902. Afterwards the model was exhibited at the Royal Academy, and the serious part of the task begun. On Tuesday, the 25th of May, 1909, the lower portion of the memorial was ready to be opened to the public. This part included the marble basins, retaining walls, sculptured panels, granite paving, steps, plateau, and bronze electric lamps. In this portion of the memorial there are about one thousand tons of Carrara marble and eight hundred tons of granite. Each basin measures 190ft. in length by 24ft. in width and 2ft. in depth. Shallow wells in the gravel at the end of the lake in St. James's Park and the lake itself supply the water for the cascades, the quantity required being 108,000 gallons an hour. Engines erected at the pumping stations in St. James's Park provide the power, and after the water has passed through the cascades and basins it returns to the lake. The chief engineer to his Majesty's Office of Works is responsible for these admirable arrangements.

Architecture and Sculpture.

"In our notice of this portion of the memorial we praised its breadth and nobility of scale, the magnificent sweep of the basins which repeats the curves of the sculptured panels of the base, the finely proportioned pediments, and the various figures in high relief and in the round. On the panels sea maidens, tritons, and children sport with joyous abandon on sea-horses, dolphins, and nautilus shells, all excellent in composition. The movement of the figures has a swing and swish that suggest the seas ruled by Britannia, but the Gothic waves respond to the force of neither moon nor wind, and the living waters in the basins emphasise their archaistic rigidity. The success of the lower part led us to believe that the monument when complete would be an imposing achievement, superb in scale and noble in decoration. And our faith was not lessened as the scaffolding rose to the sky. Within the wooden posts and beams seemed to be space enough for the display of these qualities. But now that the Memorial is uncovered we find unfulfilled the early promise of a really great monument. The scale, the general proportions of the architecture, are splendid. The figures disappoint. There has been no great effort to break from the spiritless bounds of convention. 'Truth' is partly draped, wings spread from her shoulders, a mirror rests on her right arm, her left foot tramples a serpent. Then there are a naked child and a seated figure. This group is weak in rhythm, confused in line, and, save for the mirror, it might represent anything but 'Truth.' 'Justice,' which faces north, is known by her sword; 'Motherhood' by her children. From the artistic point of view 'Motherhood' is the finest group. It is broad and monumental in treatment. The idea is concentrated in a harmonious design of not very striking originality. The gilded figures which surmount the Memorial are the least impressive of all. They fail in the monumental sense of design. They seem to be modelled with the elaboration of statuettes. Distance and atmosphere resolve objects into silhouettes that express character and emotion with unmistakable truth. Detail in a work of art should never disturb the fecundity of a distant

mass; and it is this insistence on unessential fact that robs the figure of 'Victory' of illusion. This 'Victory' appears to be insecure in her position. Seen in front, the wings and drapery seem to be overbalancing the figure. From almost every point of view we find in these figures awkward angles instead of buoyant or triumphant lines, and the guilt gives a heavy prominence to the forms that diminishes the suggestion of height." He adds, however, that "If Mr. Brock had failed in part, it is on the whole a noble work."

Some views of our own on the subject are expressed in another part of the present issue. The central architectural portion of the monument was executed and erected by J. Whitehead and Sons, Ltd., and the architectural marble work of the lower portion was executed and fixed by Walton, Gooddy, and Cripps, Ltd.

COMPETITIONS.

Church and Schools, Oldham.

In the competition for new church and schools for St. Barnabas, Oldham, the assessor has placed first the designs of Messrs. Hargreaves, Rigby, and Phipp, of Manchester. The work is to be proceeded with at once.

Clock Tower, Wednesbury.

A meeting of the Wednesbury Coronation Sub-committee was held last week, when the chief business was the selection of a design for the proposed Coronation Clock Tower in the Market Place. His Worship the Mayor announced that the assessor had given place to the plans bearing the nom-de-plume "Long live the King." Upon opening the envelope, it was ascertained that the author of this plan was Mr. C. W. D. Joynson, who was accordingly appointed, by the committee to carry out the work, the tenders for which are to be immediately obtained. It was reported that the total amount paid and promised to the fund was over £1,077.

Coventry Municipal Buildings.

At last week's meeting of the Coventry Town Council the General Works Committee reported that the Town Clerk had submitted correspondence with Mr. Dawber (the assessor) and with Messrs. Garratt, Simister, Buckland and Haywood-Farmer (who were awarded first place in the above competition) as to the partnership subsisting between the latter gentlemen, Mr. Dawber stating that, in his opinion, the terms of the conditions and instructions had been complied with. It was resolved that a special meeting of the committee be held to consider the first-premiated design, prior to a conference with the authors upon the same. In reply to a question raised by a member of the Council as to the grounds for the assessor's opinion, the Town Clerk said that Mr. Dawber's letter was as follows: "I have carefully considered the matter, and am of opinion that Messrs. Garratt, Simister, Buckland and Farmer have conformed to the conditions of the competition, as in their declaration they state that the design and drawings have been prepared by themselves in their own office, and they give a list of the works which they have as joint architects carried out, and I have no reason to doubt the bona-fides of this statement. It rests with your Council to inquire further into the matter if they see reason to do so." After further discussion the subject dropped, and the minutes were confirmed.

IN PARLIAMENT.

(By our Press Gallery Representative.)

King Edward Memorial.

In the House of Commons, Mr. Dudley Ward, replying to a number of questions relating to suggestive sites for the King Edward Memorial, said that several sites had been under the consideration of certain members of the Advisory Committee, but the Committee had not up till then had before it any recommendation of particular sites, or entertained the matter in any practical form. The First Commissioner of Works thought it most desirable that any such proposals should be laid before Parliament before they were assented to, and he was prepared to give an assurance that no proposal for alterations to any of the Royal Parks in London would be assented to till they had been laid before Parliament.

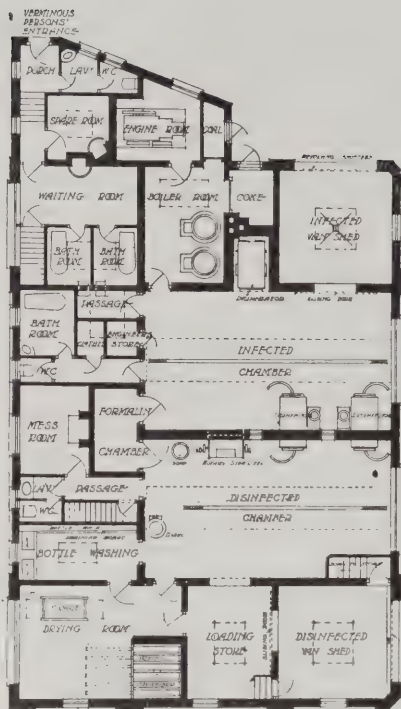
Mr. Noel Buxton wished a similar assurance in the case of public buildings and offices, but Mr. Dudley Ward was not in a position to give an answer.

Copyright Bill in Committee.

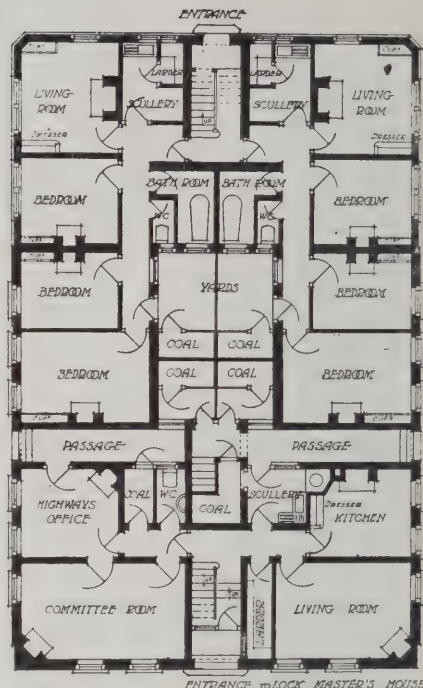
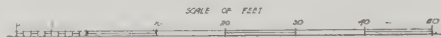
The Grand Committee of the House of Commons which is engaged upon the Copyright Bill has reached the end of the second clause, and may more sittings will be necessary before the Bill in its amended form can be reported to the House. Clause 2 contains a proviso that certain acts shall not constitute an infringement of copyright, and the Committee have agreed that among the acts which do not constitute an infringement shall be:—"The making or publishing of paintings, drawings, engravings, or photographs of a work of sculpture or artistic craftsmanship, if permanently situate in a public place or building, or the making or publishing of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art, or the making or publishing of photographs of paintings, drawings, or engravings, not being private property and situate in a public place or building, the maintenance of which depends wholly or in part on public funds."

A good deal of discussion was devoted to newspaper reports of lectures delivered in public, and the sub-section relating to this matter leaves the hands of the Committee in a form which declares that such a report shall not be an infringement "unless the report is prohibited by conspicuous written or printed notice affixed before and maintained during the lecture at or about the main entrance of the building in which the lecture is given, and, except whilst the building is being used for public worship, in a position near the lecturer." Nothing in this paragraph is to affect the provision in a previous sub-section, which permits "any fair dealing" with any work for the purpose of newspaper summary.

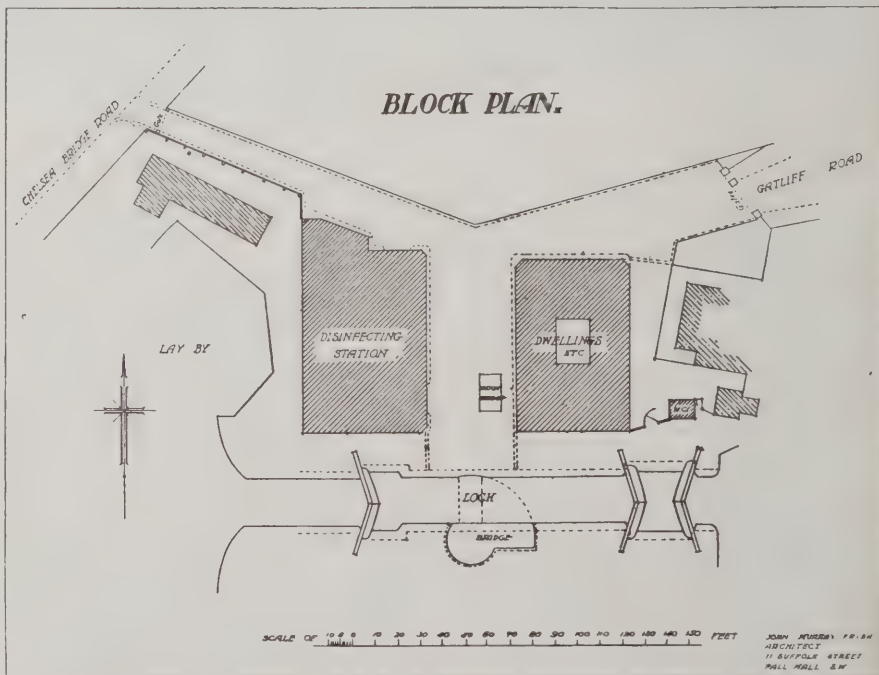
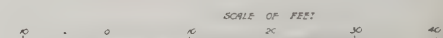
The performances of the A.A. play will take place at the Maddox Street Galleries, by permission of the Royal Institute of British Architects, on Monday, May 29th, and on the succeeding Tuesday, Wednesday, and Thursday. The performance on the Monday will be for men only (morning dress), and smoking will be permitted. Seats may be obtained only from the Architectural Association, 18, Tufton Street, S.W. Mr. Percy W. Lovell is the hon. secretary of the A.A. Play Committee.



GROUND · FLOOR · PLAN ·



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DISINFECTING STATION AND DWELLINGS FOR STAFF, WESTMINSTER.

OUR PLATE.

The City of Westminster Disinfecting Station and staff dwellings (see Centre Plate) have been erected on the west side of Grosvenor Canal lock, in an open position, well away from dwellings, with approaches both from the Chelsea Embankment and the Gatliff Road. Mr. John Murray, F.R.I.B.A., designed two blocks of buildings, one containing the disinfecting station, the other residences for the lock-master, some of the disinfecting staff, and other employees, and an office for the Highways Department. Externally the

plinth of the building is faced with red pressed bricks, the upper part with Crowborough and red brick facings, red gauged arches, and Portland stone dressings. The interior is faced to a height of 4 ft. with white glazed bricks, the walls above of all the rooms, and the ceilings of the infected and disinfected chambers being lined with white tiles. The materials used externally for the dwellings are similar to those in the disinfecting station. The Mansard roof is covered with green slates, and the elevations are of Georgian character. Mr. C. F. Kearley, 4, Great Marlborough Street, was the builder, his tender amounting to £9,921.

MAGAZINES AND REVIEWS.

In the "Art Journal," Mr. Lewis Lusk writes on the rather unusual subject "Milton and Art." Milton, on the whole, has not been happy in his illustrators; perhaps his great epic deals with scenes and personages that hardly bear to be materialised into painting. We get nothing better in the article than Turner's rather weak vignettes for Brydges' edition of Milton (the Expulsion from Paradise is the best), and a frippery "allegra" by Westall. It is odd that the writer of the article did not think of Landseer's "Defeat of Comus"; not only the best Milton illustration we know of, but one of Landseer's best designs. Mr. Hind continues his illustrations of "The Glamour of Landscape" as evidenced in the backgrounds of the earlier Italian masters. There is an interesting example from Mantegna's "Death of the Virgin," where a long mole and harbour are seen through the open bay between the columns. "Modern English Fans" shows various fan pictures and designs, which leads to the conclusion that serious picture painting over the whole surface of a fan is a mistake; it should be treated more playfully; Miss Joshua's design, partly Irish point lace with some figures thrown into the centre, is the most artistic one illustrated.

The "Burlington Magazine" makes a rather testy comment on the subject of the King Edward VII. memorial, not only complaining that there ought to have been a competition (in which we agree), but implying that Mr. Mackennal is a sculptor too little known to have been selected for so important a work. His work is well known to us, at all events, and we have always considered it as of a very high class. Among the principal articles is one by a Spanish contributor, Señor Pijoan, on "a rediscovered school of Romanesque frescos," in the churches of the north-east of Spain. He says that in all the parish churches of importance in the Pyrenean valleys there are Romanesque wall paintings, some of which have only come to light where an altar had become of market value as a thing saleable to antiquaries. A coloured plate of the apse paintings in

one of these churches, which forms the frontispiece, shows that it was a very remarkable and important work for its period. Mr. H. M. Hind contributes an article on the "Carceri" plates of Piranesi, of which a series of "early states" has lately been acquired by the British Museum.

The "Fortnightly" contains an article by Mr. Roger Fry on Post-Impressionism (a lecture delivered at the Grafton Gallery), which would seem quite admirable in its reasoning and its serious view of the objects of art—if unfortunately one had not seen the pictures to which it refers. They are the best answer to any tall talk about the mission of Post-Impressionism.

The "Quarterly Review" publishes a strong article on "The Exodus of our Art Treasures." It concludes with the recommendation of a compulsory Government scheduling of all works of art of high value in the houses of private owners, with (if we understand it rightly) some legal provision that these, in any question of sale, should be offered first to the State Museums. We hardly think it is strong enough to be of any use; the State probably could not compete with American bidders. A law against selling great works of art out of the country would alone be really operative.

The "Contemporary Review" contains an article by the Count de Soissons, of "The Pictorial Art of China." It is one of the latest humours of writers on art to discover that Chinese paintings are not grotesque — not in the least; it is we westerners who do not understand them; they are full of deep meaning and form a great school of art. We should say, as of the Post-Impressionists, that the works themselves are the best answer to such pretensions. It is one of the characteristics of present-day criticism to be constantly discovering occult beauties and meanings in things generally considered ugly. It is a kind of mental aberration that will run its course and disappear again.

The "Gazette des Beaux-Arts" contains a long article by M. Marcel Reymond on "The Altar of Val-de-Grâce and the work of Bernini in France." The church of

Val-de-Grâce, as will be remembered, is the classical domed church in Paris built in the middle of the sixteenth century from the designs of Hardouin Mansart. The baldacchino before the altar, of which a full-page illustration is given, is claimed to be by Bernini, and has all the appearance of being by the same hand as the baldacchino at St. Peter's. M. Reymond writes a long essay on the work of Bernini, to whom he considers the later French Renaissance was immensely indebted. That he influenced the French architecture of his period is probable enough; but for good or bad is another question.

Piranesi seems in the air now, and the "Century" contains another article on him, very well written, by Mr. F. Keppel, who commences by quoting a characteristic remark by Legros about Piranesi's etchings: "If only these etchings were as small in size as the etchings of Rembrandt, they would be selling for prices about as high." Collectors of etchings abhor a big print, and so Piranesi's grand works go cheap.

DETAILS—OLD AND NEW.—IX.

Wrought-Iron Railings, Stamford.

In last week's issue, we gave details of a doorway at Barnhill, Stamford, Lincs. We now describe and illustrate in detail the wrought-iron railings shown round the window to the right of the doorway (p.528, May 17th) of No. 12, Barnhill, as well as that of No. 11.

Although at first glance the designs of the two railings (Nos. 11 and 12) are similar, they are really very little alike. It would be difficult to decide which is the better; for if No. 12 has the advantage in its beautiful spear-heads and curious panels, the other has it in its crestings and scrolls. Both pieces are, however, well designed and constructed. Unlike the majority of London railings, where every upright bar it let into the stone, eventually to the detriment of the iron, these rails have a kind of sill-piece, raised from the stone a few inches, from which the uprights spring. Support is given at intervals by stouter bars being taken through the sill-piece and mortised into the stonework.

G. M. W. H.

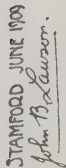


SHOPS AT LETCHWORTH, HERTS. ALWYN O. CAVE, ARCHITECT.



The railings of the two houses, although at first sight they appear very similar, prove on closer examination to be very little alike. Both pieces, however, are well designed and constructed, and it is interesting to compare these Stamford examples with contemporary eighteenth-century work in London. Great divergences in style as well as in construction will then be observable.

DETAIL VIEWS OF WROUGHT-IRON RAILING TO NO. 11, BARNHILL, STAMFORD.



QUANTITY SURVEYORS' ASSOCIATION DINNER.

The annual dinner of the above association was held on Wednesday evening last in the Connaught Rooms, Great Queen Street, Kingsway. Among those present were Mr. S. Chatfield Clarke (president), Mr. P. B. Tubbs, Mr. J. Dixon Butler, Mr. A. A. Hudson, K.C., Mr. Horace Porter, Mr. A. W. S. Cross, Mr. William Woodward, Mr. Arthur Keen, Mr. Walter Lawrance, Mr. H. H. Bartlett, Colonel G. Hayward Trollope, Mr. H. A. Bartlett, Mr. Leonard Horner, Mr. G. Bird Godson, Mr. Thomas Costigan, Mr. Arthur G. Cross, and many others. The customary loyal toast having been observed Mr. William Woodward, proposing the toast "The Quantity Surveyors' Association," said that originally the Association had only 80 members; now it had 250, the increase having been made since 1903. He much regretted the competition that existed among quantity surveyors; and it was distressing to read of the low rate of charge for which quantities were carried out. The Association had issued, he believed, a standard of remuneration to which members were supposed to adhere. He believed also that if they committed an error they undertook to compensate the builder and the client, although they were not legally bound to do so. Having referred to the approaching amalgamation of the Society of Architects with the R.I.B.A., Mr. Woodward said he thought that the Quantity Surveyors' Association would be considerably strengthened if it could amalgamate with the Surveyors' Institution. Mr. S. Chatfield Clarke, in reply, said that since their last dinner they had had a rather uneventful year. They had been in touch with many public bodies as to the rates for quantity surveyors' work, and in many cases the rates presented had been accepted. He hoped in course of time they would be able to stop the objectionable practice of tendering for quantities. They had issued, some three or four years ago, a minimum scale of charges which, unfortunately, public bodies seemed to regard as maximum. Later they were pressed to issue another scale for damage by fire; but, in view of the reception which their previous scale had met, they had decided not to do so. Their council had compiled a second pamphlet on "spot" bills, and, after consulting various federations of builders, had arrived at what he hoped would be unanimously adopted. The chief alteration in their bylaws had reference to the creation of a new "licentiate" class of members. Clause 13, which had regard to responsibility for quantities, and to which Mr. Woodward had referred, had been redrafted; and although it meant virtually what it did before, the alteration would bring many well-known surveyors into their ranks. Referring to Mr. Woodward's suggestion for amalgamation with the Surveyors' Institution, Mr. Chatfield Clarke explained that quantity surveyors formed only a small proportion of the Institution's 3,000 members, and they had therefore started the Quantity Surveyors' Association, not to compete with the Institution, but rather to supplement its work, and to represent adequately their own particular branch of the surveying profession.

Mr. Henry Riley, proposing the toast "The Architects," said that those gentlemen were the very best friends of the quantity surveyor. In view of the reinforcement of the Royal Institute's ranks,

he continued, it seemed only natural to assume that registration and copyright would speedily be dealt with.

Mr. Arthur Keen, in reply, said there was a time in the history of the world when the architect had the time, as well as the ability, to follow other professions; but the tendency had been to specialise. He fully believed that the builder would be in the bankruptcy court and the architect in the asylum, but for the help of the quantity surveyor.

Mr. S. A. Stanger, in proposing the toast "The Contractors," recalled that Dr. Johnson regarded London as "the best place in summer and the only place in winter"; and the men who had made this London what it was were the contractors. He rather regretted the passing of the old-fashioned builder. Contractors of the present day had to have a dash of the lawyer and an artistic perception; but their most admirable possession was the becoming quality of benevolence.

Mr. G. Bird Godson, replying, said the present-day builder was just as good a tradesman as he was in former years. What the builder would do without the quantity surveyor he was afraid to contemplate.

Mr. Walter Lawrance, in the absence of Mr. H. T. A. Chidgey, proposed the toast "The Guests," to which Mr. A. A. Hudson replied.

The health of Mr. Arthur G. Cross having been heartily accorded, Mr. Cross made a brief reply.

A BIG BUCKET EXCAVATOR.

A bucket excavator constructed recently by the Lübecker Maschinenbau Gesellschaft of Lübeck is claimed to be the largest in the world. It is designed as a gantry excavator with buckets, and is suitable for both shallow and deep work. The opening for the buckets is 3.20 metres in height above rail level, and 3.60 metres in width. The speed of the chain, provided with buckets of 500 litres capacity, is so arranged that 32 buckets may be discharged a minute. The effective output with buckets filled to about 70 per cent. of their capacity works out at about 700 cu. m. an hour, but an output of 860 cu. m. an hour has been obtained in light ground. Two trains of wagons are loaded alternately by the discharge of the buckets, the dredged material being poured into either train, according to the position of a hand-operated valve. The bucket chain can be used both with guided and sagging buckets. The greatest dredging depth with guided buckets and 45 deg. inclination of the bucket chain is 22 metres, while a depth of 15 metres can be obtained with an inclination of 32 deg. In the case of deep work the chain is suspended by a tackle and chains from an iron outrigger, while for shallow work it is so suspended from two tackles that the portion of the chain inclined to the wall to be excavated can be lifted and lowered parallel to itself with simultaneously working tackles. Moreover, the two tackles may be worked independently of one another, thus allowing the inclined upper portion of the bucket chain likewise to be lowered into a horizontal position. The main driving motor which effects the motion of the bucket chain develops about 280 h.p. at a speed of 440 r.p.m. and 500 volts direct current. Another direct current motor of about 41 h.p. is employed to shift the excavator on its track, while the third motor, of about 11 h.p., is used to tighten the bucket chain.

THE COST OF THE NEW LIVER BUILDINGS, LIVERPOOL.

Considerable discussion took place at the recent conference of the Royal Liver Friendly Society at Scarborough on the increase in the estimated cost of the new chief offices at the Liverpool Pierhead.

Mr. George Belster, of Bristol, introduced the question when moving the adoption of the report, remarking that it appeared to him the total cost would be nearly £700,000.

Mr. Edwin Goodship (London), who seconded, pressed for information respecting the cause of the greatly increased estimate of the cost of the new offices. The amount expended up to December last was £427,000, a sum which was thousands of pounds in excess of the original estimate. At a modest assumption, he assumed that the final cost would be over £600,000, or more than 100 per cent. beyond what they were informed would be expended.

Mr. S. Skelton (treasurer) supplied figures showing the cost of the new offices, and said the amount actually paid up to now was £479,704 18s. 3d., and the total estimated cost was now £644,522 4s. 7d.

Mr. Edward Simpson, of the committee of management, explained that since the original estimate the building had been very materially enlarged, but their prospects from rentals had also been correspondingly enlarged. Instead of the originally estimated rental of £18,500, they now estimated it to be £33,000 per annum. Already there was £18,278 let in rentals. After allowing 25 per cent. for contingencies, the offices would pay 3.87 per cent. In addition, they had the value of the advertisement which the offices afforded. When the original estimates were given it was never anticipated that they would have to build a very expensive, and at the same time necessary, containing wall around the foundations. Owing to old culverts and old drains, records of which even the city of Liverpool did not possess, they had to build a wall which prevented any water whatever from coming on to the building. At the present moment the adjoining offices of the Dock Board were necessitating extraordinary and continued expense in dealing with this question of water which the Royal Liver had solved. Moreover, the new offices were so constructed that there was nothing to keep in repair. Then they had had to square the land, which added enormously to the expense of the building, and more space for letting purposes had been secured. Other reasons for the increased estimate were the heightening of the floors and raising the tower. He contended that it was beyond dispute that this was the finest site in the United Kingdom, and that the society had a safe and profitable investment.

A long discussion took place on the details of the additional works, during which Dr. G. B. Clark (trustee) supported the view that the offices and site would appreciate in value.

Eventually the balance-sheet was unanimously passed.

The Lords Commissioners of the Treasury have appointed the Right Hon. Lewis Harcourt, M.P., Secretary of State for the Colonies, to be a Trustee of the Wallace Collection in the place of the late Right Hon. Sir Edward Malet, G.C.B.

CONCRETE AND STEEL SECTION

(MONTHLY.)

Ready Reckoners for Designs. That reinforced concrete practice has gone almost full circle, and is becoming in a sense

standardised, is apparent from the recent increase in the publications on the subject. Among the most useful of these, and at the same time one of the most significant with regard to the consumption at which we have just hinted, is that in which Mr. Frederick Rings, M.S.A., simplifies and tabulates the ordinary calculations necessary for reinforced concrete work. Mr. Rings has designed a complete set of reckoners, dealing with slabs, beams, and ribbed ceilings. As he points out, such calculations are very tedious, consuming an enormous amount of time when it can least be spared; while the hurried working out of complicated decimals gives rise to errors that may occasionally escape notice and perhaps prove in some way disastrous. Of course, as the author very rightly insists, all such calculations should be rigorously checked; and the human inclination to shirk this very tedious operation must be sternly suppressed. These ready reckoners will apparently serve a very useful purpose in affording a much less irksome means of checking designs; but whether they will, as the author suggests, "enable the man who has not the required knowledge of mathematics to design accurately reinforced concrete structures almost mechanically," is at least open to question; and, indeed, we venture to think that this is a view of the subject that ought not to be encouraged, at all events in the present state of knowledge and practice.

Standard Notation.

Mr. Rings's six stress diagrams are accompanied by a booklet in which they are explained, with worked examples. The reckoners are in duplicate, one set being based on maximum stresses of 500 lbs./in.² for concrete, and 15,000 lbs./in.² for steel, and the other on 600 lbs./in.² for concrete and 17,000 lbs./in.² for steel. The symbols used are based on the standard notation suggested by the Science Standing Committee of the Concrete Institute, and are set out clearly at the beginning of the booklet, as follows:—*b* breadth of rib in a tee-beam in inches; *b*¹ effective breadth of slab in tee-beam in inches; *c* compressive stress intensity on concrete; *d* effective depth of beam or slab from top to axis of tensile reinforcement in inches; *d*_s total depth of slab in tee-beams in inches; *d*_t total depth in inches; *i* inset of centre of reinforcement from bottom of slab or rib in inches; *l* effective length or span of beam; *m* modular ratio, i.e. the ratio between the elastic moduli of steel and concrete = $\frac{E_s}{E_c}$ taken as 15 in calculating the reckoners; *t* tensile stress intensity on steel; *w* weight or load generally, per unit of length or area; *A*_c area of compressive reinforcements of beams in inches²; *A*_t area of tensile reinforcements in beams in inches²; *B* bending moments; *W* weight of load. The author might perhaps have usefully added that the expression (Hospitalier notation) for cubic inches

is ins.³; that for lbs. per square inch lbs/in.²; hundred-weights per cubic foot = cwt./in.²

The Language Difficulty.

The theory is that algebraical notation in engineering formulae should be simply a species of shorthand in which one letter stands for a word or phrase. It should have a logical basis, should be self-explanatory, and should not tax the memory. It is of course very desirable to have a system that is international, or what is called universal; but that proposal was balked by the insuperable difficulty presented by differences in language. The letters that are significant for one language are often meaningless for another. It was therefore wisely decided to confine the agreement with the Continent to general principles, and to retain the letters that are significant for the English-speaking peoples.

The "Three Alphabet" System.

The lettering adopted is on what has been conveniently called the three-alphabet system, in which Latin smalls or minuscules are used for denoting lineal dimensions (lengths and distances, etc.); intensity of forces, of loads, and of stresses; constants, etc.; Latin capitals or majuscules are used for areas and volumes, moments, total forces, loads, and stresses, angles, constants, etc.; with Greek smalls for certain other angles, constants, etc. The system has commended itself by its directness, simplicity, and clearness, and it is gratifying to find that it is being adopted by the authors of text-books. It should be mentioned, by the way, that Mr. Rings's "Ready Reckoners" are published by the author at Bank Chambers, 92, Tooley Street, London Bridge, S.E. Besides the half-dozen 12½ in. by 9¼ in. plate diagrams, there are others in the text, which comprises also some useful "Notes and General Information," and a table showing the weights of steel rods of various sections.

Reinforced Concrete Bridges.

A list of the bridges that, within the past few years, have been built of reinforced concrete would assume formidable length. Indeed, it is hardly too much to say that this is now the favourite form of construction for that class of work. A recent addition to the list is a new road bridge over the river Stour in East Anglia. This bridge, which is being constructed by Messrs. Stephen Kavanagh and Co., Ltd., from designs by Mr. Thomas Miller and Mr. P. J. Sheldon, respectively surveyors to the East Suffolk and the Essex County Councils, is 142 ft. long between abutments, and is 25 ft. wide—20 ft. being roadway, with 2 ft. 6 in. footpath on each side. The six arches are supported on fifteen reinforced concrete piles, which, arranged in five sets of three, have been driven into the river-bed to an average depth of 8 ft. The three arched girders to each arch spring from the pile-heads; and the ends of the girders and the tops of the piles are bound together by means of a cross beam, thus forming a frame-

work to carry the decking. Very large bridges of reinforced concrete construction are at present only to be seen abroad; but the numbers of small bridges that are being put up in this country should do good work in familiarising and commending this method of construction.

Rapidity of Construction.

There are, of course, another Stour, and another reinforced concrete bridge over it. Some two years ago, a bridge of the flat girder type, having a span of 47 ft. in the clear, with a width of 15 ft., was constructed over the river Stour at Chilham, in Kent, for the East Ashford Urban District Council. This small bridge was constructed with remarkable rapidity, only six working days being occupied in the actual construction. Of this bridge, the abutments, which also form retaining walls, are carried down to a solid bottom 10 ft. below the surface of the roadway, the main girders being carried up to form the side parapets. The roadway is carried on a 5-in. thick reinforced concrete deck supported on intermediate beams. Messrs. D. G. Somerville and Co. carried out the work, using the Kahn bar system of reinforcement. Railway bridges of reinforced concrete are perhaps even more numerous in this country than river bridges. Rapidity of construction for the former service is an essential consideration; and, as implied in the reference to the Chilham river-bridge, reinforced concrete construction seems to be admirably adapted to meet this requirement, and, as a rule, the operations can be conducted with minimum interference with the traffic below.

By-laws and Notation.

The Local Government Board, it appears from an item in the annual report of the Concrete Institute, know of only one authority—the Urban District Council of Newquay, Cornwall—that has in force bylaws specifically dealing with the construction of buildings of reinforced concrete. Some half-dozen local authorities, however, have bylaws with relation to steel-frame construction, which may be taken as including certain forms of reinforced concrete construction. In a large number of rural districts there are no bylaws for the regulation of building. With regard to London, it is satisfactory to learn that the Concrete Institute, in concert with the Institution of Civil Engineers, the Royal Institute of British Architects, and the Surveyors' Institution, is suggesting a series of amendments, of which the particulars may not yet be made public, of the L.C.C. regulations with respect to reinforced concrete construction. This very necessary work is apparently being done in the right way. The Concrete Institute score another important point in the favourable reception, in various influential quarters, of the standard notation for reinforced concrete calculations, as drafted by their Science Committee. It is hoped that the notation will be adopted by the R.I.B.A. Joint Committee in their revision of the 1907 rules, and by the L.C.C. in their regulations.

REINFORCED CONCRETE AT THE
FESTIVAL OF EMPIRE EXHIBITION.

The two new staircases, of which one is here illustrated, have been constructed in connection with the Festival of the Empire and Imperial Exhibition at the Crystal Palace, giving access to the grounds from the main floor level of the Palace. The two staircases, which are similar but of opposite hand, are L-shaped, and lead down from the main floor level to the terrace below, a height about 34 ft. 6 ins., the upper limbs being 24 ft. 4 ins. wide over balustrading, and about 75 ft. long, the lower limb being 21 ft. 4 ins. wide and about 83 ft. long. The steps are 14 ins. by 6 ins., with grooved treads, the whole of the upper surface being finished with 1 in. granolithic, special care being taken to see that this was put on as soon as possible after the main body of concrete had been deposited. The work, which is of bold design and pleasing effect, is of reinforced concrete throughout, with the exception of the balustrading between the pilasters, which was moulded in pieces at the contractors' works, and afterwards erected.

The concrete, of which there is some 350 cubic yds., was hand-mixed in the proportions of 27 cubic ft. of washed shingle $\frac{3}{4}$ in. to $\frac{1}{8}$ in. in size; 13 $\frac{1}{2}$ cubic ft. of washed sand coarse in texture, varying from $\frac{1}{8}$ in. down, to 6 $\frac{1}{2}$ cwts. of English Portland cement to British standard specification, ordinary mild steel bars being used as reinforcement. The work was commenced on Feb. 10th, and concreting was completed April 13th; with the exception of the balustrading, which was finished on May 9th. All the shutter-

ing was removed by May 6th; but temporary raking struts were then placed under the centre beams of the top three flights in both staircases, as the concrete was then only about one month old.

The stairs were opened ready for use by the public on May 12th, on which day the Exhibition was opened by the King and Queen, who passed down the north flight to enter the grounds. The design involved some special care, and was made somewhat heavier than otherwise necessary, as it was essential that no shuttering should be left up after the 11th of May, and both flights had to be ready for use by the 12th. The short time in which the work was completed and the excellent finish obtained reflect great credit upon the contractors, The Empire Stone Co., Ltd., Thanet House, Strand, W.C., who carried out the work to the designs of Mr. Burnard Geen, A.M.I.C.E., Consulting Engineer to the Council of the Festival of Empire and Imperial Exhibition.

The gallery here illustrated is 15 ft. wide, with columns 9 in. by 9 in., spaced about 19 ft. apart and 12 ft. out from the main walls of the building, which is a polygon having 16 sides.

The main beams are 16 ins. by 7 ins., the secondary beams being 9 ins. by 5 ins., with 3 ft. cantilevers, three out of every four of which are arranged at right angles to the wall, the fourth being arranged radially. The slab is 3 $\frac{1}{2}$ ins. thick. Access is provided to the gallery by two flights of stairs, the whole of the surface of the stairs and gallery slab being finished with 1 in. granolithic put on as soon as possible after the main body of the concrete.

Considerable difficulty was experienced in getting the concrete to harden rapidly enough owing to the old building being completely enclosed and having only one small exit; but after further openings were made and a current of air established the concrete rapidly hardened. For this reason, with the exception of one bay opposite the old opening, the shuttering was kept in position three weeks in the case of the slab and sides of beams, and six weeks in the case of the soffits of beams. This applied to almost two-thirds of the work until the provision of the further openings mentioned, after which the slab centering was removed in ten days, and beams in eighteen days.

The design is of the plainest possible description, and everything was done to keep down the expense to a minimum.

The gallery was designed to carry a safe load of 1 $\frac{1}{2}$ cwts. per 89 ft. in addition to its own dead load; and was constructed by Messrs Humphreys, Ltd., of Knightsbridge, to the designs and under the supervision of Mr. Burnard Geen, A.M.I.C.E., the Consulting Engineer.

A party of members of the Society of Engineers and their friends, numbering nearly 100, visited the Crystal Palace on Saturday, May 6th, 1911, to inspect the building works in progress. Mr. Burnard Geen received the party, and explained the chief points of interest, including the works detailed above. Among the works of interest examined by the party was the strengthening to the existing roof of the Indian Section, a polygonal-shaped building with sixteen sides. The existing iron domed roof, with a fixed span of



REINFORCED CONCRETE STAIRCASE AT FESTIVAL OF EMPIRE EXHIBITION, CRYSTAL PALACE. BURNARD GEEN, A.M.I.C.E. CONSULTING ENGINEER.



REINFORCED CONCRETE GALLERY AT FESTIVAL OF EMPIRE EXHIBITION, CRYSTAL PALACE.
BURNARD GEEN, A.M.I.C.E., CONSULTING ENGINEER.

123 ft. 6 in. and a rise of 27 ft., built thirty years ago, was found to be in bad repair, and in order to carry the new false dome of fibrous plaster, supported on timber framework, which it was decided to add, it was necessary to truss the existing ribs. Scaffolding was erected from below, and the closing members of the new steel trusses were put in with initial tension, so as to relieve the existing ribs of dome action and convert them into compression members of the new trusses.

At the main entrance to this building there is a drop of no less than 10 ft., which has been got over by a flight of thirteen steps leading down to a raised platform 3 ft. 6 ins. high above the main floor of the building, 12 ft. wide and about 60 ft. long, with a further seven steps at each side, thus converting a serious difficulty into a feature of the building.

Passing out into the grounds again the party had a good view of the various features of the exhibition, and inspected the buildings for housing the exhibits from South Africa, New Zealand, and Australia. These latter buildings are models to three-quarter full size of the parliament houses of the respective Colonies, and have an area collectively of about 6,500 super. yards. They are constructed of timber covered with fibrous plaster, painted so as to take the appearance as far as possible of the stonework of which the originals are constructed.

WHIRLED CONCRETE PILLARS.

Concrete pillars and piles are now being cast in a rapidly whirling cylindrical mould, which packs the concrete into a crust, leaving a hollow centre. The results are said to be far superior to those reached by any other method. The manufacture of columns, and even of piles, from reinforced concrete has now entered into current practice, but the columns of this kind made by the firm of Otta and Schlosser, of Meissen, Saxony, are remarkable for the very original process used in the preparation. These columns are hollow, and a rotative machine using centrifugal force is used to make them. In a mould of wood covered with sheet iron, open at the ends, is first placed a reinforcement composed of longitudinal

steel rods connected by a spiral of iron wire. A proper quantity of mixture of cement-mortar and asbestos-fibre is then turned into the mould. It is placed in a special machine, which gives it a rotary motion of 500 to 1,000 turns a minute. The plastic mass is thus thrown against the walls of the mould, burying the reinforcing rods, and the violence of the centrifugal force produces a compression of the layer of reinforced concrete thus formed. The surplus water also is pressed from the concrete by this means.

The time of treatment varies from 10 to 15 minutes, according to the thickness that it is desired to give to the layer. At the expiration of that time, the mould may be removed from the whirling machine, but it must of course be left in place long enough for the concrete to set completely, which will take place in from 12 to 24 hours. The column is then buried under a layer of wet sand, where it is allowed to harden slowly for three to four weeks. Different thicknesses may be given to different parts of the crust by inclining the mould properly during its rotation, the plastic mass tending to move towards the lowest point. Columns of this kind are made up to lengths of 45 ft., with diameters of 6 to 15 ins., and a thickness of crust of one to three or four inches. They are said to be strong and elastic.

In December, 1909, a competitive test was held before a technical commission and the municipal council of Prague, Bohemia, between five hollow poles made by the centrifugal process and five solid poles made by another process. Total length, 32.80 ft.; free length or portion of pole above ground during tests, 26.24 ft.; outside diameter at butt end, 13.38 ins.; outside diameter at top end, 6.48 ins.; working stress or wire pull, 660 lbs. The factor of safety was three, thus making the ultimate strength of each pole, according to calculations, 1,980 lbs. One pole from each of the two processes was tested to the breaking point. The centrifugal pole broke at a total pull of 2,552 lbs., being 572 lbs. above specification. The competitive pole broke at 1,606 lbs., being 374 lbs. under specification.

The object in testing five poles by each process was to ascertain the uniformity of deflection. In all of the five centrifugal

poles the deflection proved absolutely regular, and, following the satisfactory results of the test, the commission, in behalf of the water works of Prague, Bohemia, placed an order for 1,000 centrifugal poles.

In addition to the foregoing technical tests centrifugal poles have been in actual use for four to five years, subjected to the most varying climatic influences, and in all cases have proved their permanency.

A REINFORCED CONCRETE DOME IN BOMBAY.

The dome on the new Post Office building, Bombay, has been constructed under the direction of Mr. G. Wittet, Consulting Architect to Government, Bombay. As far as the base which supports the actual shell is concerned the methods which were used by the Saracens in putting a dome on a square base have been followed. The square is reduced to a thirty-two-sided figure with vaulting, and from this vaulting there rises a cone of reinforced concrete which forms the drum of the dome from which the dome itself rises. The cone is about nine inches thick, with $\frac{3}{4}$ -in. bars running through it, and on the top of it was built up a steel framework of light ties and angles, to which the centering for the dome was attached. It was so arranged that the centering and reinforcing steelwork could be hung from the horizontal rings of the steel framework, which are 3 ft. apart; and thus the work of filling in the concrete in any of these layers could be carried on independently of the others, the construction process being thus simplified and expedited. By the adoption of the method of using reinforced concrete on the curved steel framework it has been possible to leave the dome quite hollow, the usual method of having cross supports in the hollow being thus done away with entirely. From the ground floor level to the apex of the dome the height is about 110 ft., and the dome, which is 64 ft. 6 ins. in diameter (including the thickness of the shell), rises from 72 ft. square. The reinforced concrete shell is 8 ins. thick. It is expected that the new G.P.O. will be completed in July.

THE CONCRETE INSTITUTE.

In the report of the Council presented at the annual general meeting, which was held at Denison House, 296, Vauxhall Bridge Road, Westminster, S.W., on May 11th, Sir Henry Tanner, I.S.O., F.R.I.B.A., in the chair, it is recorded that the Council has in the past year been concerned with various technical and administrative matters. It has had under consideration a draft of suggested regulations to be made under the provisions of Section 23 of the London County Council (General Powers) Act, 1909, with respect to the construction of buildings wholly or partly of reinforced concrete. These regulations were submitted by the Superintending Architect of the London County Council to the Institute for its consideration in accordance with the provisions of the 1909 Act referred to, whereby it is enacted that the Concrete Institute, together with the Institution of Civil Engineers, the Royal Institute of British Architects, and the Surveyors' Institution, are to have notice of the Council's intention to apply to the Local Government Board for allowance of any regulations as to the use of reinforced concrete in the County of London. In connection with this the Royal Institute of British Architects convened a meeting of representatives of various technical societies interested in the matter, and Mr. Charles F. Marsh, M.Inst.C.E., and Mr. T. B. Shore were appointed as the delegates of the Concrete Institute. This Conference of Societies held a number of meetings, and recommendations were arrived at which were transmitted by the Royal Institute of British Architects to the London County Council. The Science and Reinforced Concrete Standing Committees of the Concrete Institute held six joint meetings, at which were drawn up a number of recommendations for the amendment of the draft regulations. These suggested amendments were put forward by the Institute's delegates at the Conference of Societies. The Council transmitted to the Superintending Architect the proposed amendments arrived at by the Joint Committee of the Concrete Institute, and informed him that the Institute was in substantial agreement with the recommendations of the Conference of Societies, but would be glad if the London County Council would also consider the further suggestions contained in the Joint Committee's amendments. The matter is at present confidential, as the draft regulations submitted were merely in a preliminary stage; the Council is therefore unable to furnish detailed particulars of the recommendations made to the London County Council.

Engineering Standards Committee.

The Engineering Standards Committee asked the Concrete Institute to appoint a representative on their Sectional Committee on Portland Cement, and the Council in May appointed Mr. Herbert W. Anderson, Assoc.M.Inst.C.E., to act in that capacity. The Engineering Standards Committee at a later date asked the Institute to appoint a representative on their Sectional Committee on Bridges and Building Construction, which deals with the standard specification for steel, and Mr. William G. Kirkaldy, Assoc.M.Inst.C.E., was appointed by the Council. The Royal Institute of British Architects asked the Concrete Institute to appoint two representatives on the Joint Committee on Reinforced Concrete, and the Council appointed Mr. William G. Kirkaldy, Assoc.M.Inst.C.E., and Mr. Charles F. Marsh, M.Inst.C.E., to act in that capacity.

A library is now in process of formation at the new offices of the Institute, and the periodicals are being obtained, so that members will be able to use one of the rooms as a library, to which members are invited to contribute.

Last year the Council had the question of the revision of the rules under consideration, and a sub-committee was appointed, which reported in due course, and last October the new rules were passed at extraordinary general meetings of the Institute, and are now in force. The general effect of the new rules was to do away with the executive and to abolish the offices of honorary secretary, honorary treasurer, and chairman of the executive, thus enabling the management of the Institute to revert directly to the Council, the conduct of the general business being done under their supervision by a permanent secretary. The appointment was advertised, and 217 applications were received; a selected number of applicants were interviewed, and eventually Mr. H. Kempton Dyson was appointed secretary in May, 1910.

The amended rules also provided for the creation of a Students' Section, which it was felt would be an advantage to the Institute in respect to future members and would be in conformity with the professed object of the Institute as regards the education of the public in matters concerning concrete generally. This Students' section has been started, and eleven students already enrolled.

A medal will be granted for the best paper read at general meetings in each session, it being thought that this should encourage the contribution of data that would prove of service to members, particularly when recorded in the Transactions.

Certificates of Membership will be issued, and their form is now under consideration; designs are being obtained for a seal which will be used for the general purposes of the Institute, and more especially for the certificates of membership and stationery.

By-law Amendment, etc.

With a view to the removal of restrictions in the building bylaws in respect to the construction of reinforced concrete and the short loan periods granted by the Local Government Board on structures of such material, the Parliamentary Committee has been in communication with the Board in reference to bylaws respecting reinforced concrete construction and walls of new buildings, and the reply, dated December 8, 1909, stated—"The Board are only aware of one authority, the Urban District Council of Newquay, Cornwall, who have in force bylaws specifically dealing, except in connection with steel framing, with the construction of buildings of ferro-concrete. The Board confirmed a series of bylaws for that authority on October 22nd, 1909, which has the effect of allowing the walls of new buildings to be constructed of reinforced concrete of such thickness as shall be necessary to secure due stability. Some local authorities, including the Town Councils of Leeds, Salford and Windsor and the Urban District Councils of Brentford, Kings Norton and Northfield, Penge, and Southall Norwood, have made bylaws allowing the construction of buildings of steel framing filled in with brick or other incombustible material, which, of course, includes ferro-concrete. . . . In a large number of rural districts in the country either there are no bylaws in force regulating buildings or the bylaws are based on the Board's rural code, which makes no provision as to the structure of

walls for securing stability or the prevention of fires. In such districts the construction of buildings of ferro-concrete would be unrestricted. In many other districts a bylaw has been adopted similar to that numbered 4 in the Board's provisional Intermediate Model which allows the erection of domestic buildings, subject to certain conditions as to size and position, of other material than brick and stone. The use of ferro-concrete would thus be permitted in the construction of such buildings. The Board may say that they have not found that a large number of local authorities have expressed a wish to make provision in their bylaws for the use of ferro-concrete. They will, however, bear in mind the question of regulating its use in any future edition of the urban model code which they may issue." The Parliamentary Standing Committee of the Institute replied to the Local Government Board, suggesting the inclusion of provisions in the Model Code to permit the use of hollow concrete blocks for walls.

A Joint Committee is being formed by the Science Committee to inquire into the proper loads to be allowed for in the design of highway bridges, and the Institution of Municipal and County Engineers and the Institution of Municipal Engineers have already appointed representatives.

The Science Committee drafted a report on the Rusting of Steel inside a Concrete Covering, which was submitted at a general meeting on March 9, 1911.

Standard Notation.

The Standard Notation for calculations for reinforced concrete which was drafted by the Science Committee and approved by the Council has been favourably received and will in all probability be adopted by the Joint Committee on Reinforced Concrete, appointed by the Royal Institute of British Architects, in their revision of the report first issued by them in 1907, and by the London County Council in their regulations governing the erection of reinforced concrete structures in London. It has also been adopted by the authors of text-books, and it is to be considered by the American Joint Committee on Concrete and Reinforced Concrete. It therefore promises to be of considerable utility. The Tests Committee is collecting data regarding aggregates and compression tests on concretes made with various mixtures. Information is also being collected regarding the presence of sulphur in concrete aggregates, and various other subjects are under consideration with a view to the issuing of reports dealing therewith in due course. Suggested standards for tests as to the crushing resistance of concrete are being drafted, and will also form the subject for a report.

The Reinforced Concrete Practice Standing Committee has in hand a report on the standardising of Drawing for reinforced concrete, which it is hoped to issue shortly, and other subjects being investigated are methods of treating the surface of concrete, the cracks due to expansion and contraction in reinforced concrete, the consistency of concrete, and conditions of contract relating to sub-contractors for reinforced concrete work.

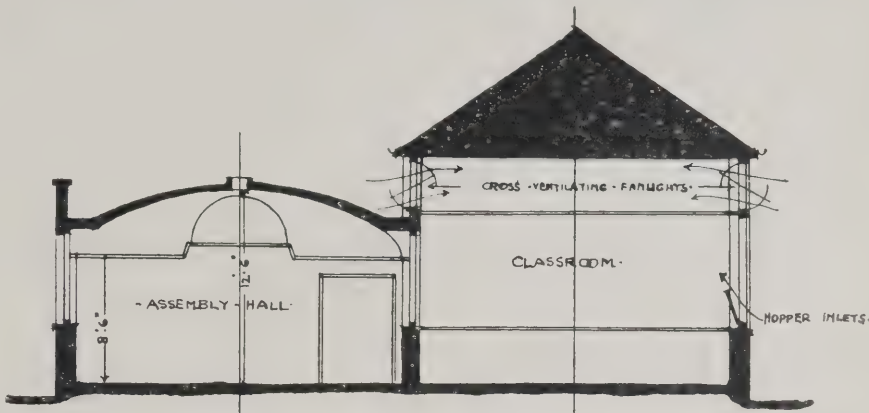
The report and statement of accounts were adopted. Six new members were elected, and two new students were admitted. The result of the annual election of members of Council was announced as follows:—Messrs. G. C. Workman, W. T. Hatch, Charles F. Marsh, D. B. Butler, E. P. Wells, C. S. Meik, J. Ernest Franck, Henry Tanner, W. G. Perkins, Bertram Blount, and J. Gibson Fleming.

A two-days' summer meeting and first annual dinner will be held on Wednesday and Thursday, June 7th and 8th. The following is a preliminary programme:—Wednesday, June 7th: 11.30 a.m. Meeting in the Lecture Hall at Denison House, 296, Vauxhall Bridge Road, Westminster, S.W., when a paper will be read by Professor Beresford Pite, F.R.I.B.A., on "The Æsthetic Treatment of Concrete," after which an interim report of the Tests Standing Committee on "The Testing of Concrete, Reinforced Concrete and Materials employed therein" will be presented. A discussion on the paper and report will follow. 3 p.m. Visit to the Wesleyan Memorial Hall, Tothill Street, Westminster, by kind permission of the architects, Messrs. Lancaster and Rickards, F.F.R.I.B.A. 7.30 p.m. for 8 p.m. First annual dinner at the Trocadero Restaurant, Shaftesbury Avenue, W. Members will be received by the President, Sir Henry Tanner. After the dinner there will be an entertainment programme and a few speeches. Thursday, June 8th: 11.30 a.m. Meeting at Denison House, Westminster, when a paper will be read by Mr. Alfred E. Corbett, F.R.I.B.A., on "The Y.M.C.A. Building, Manchester," after which a report of the Reinforced Concrete Practice Standing Committee on "The Standardisation of Drawings of Reinforced Concrete Work" will be present. A discussion of the paper and the report will follow. 3 p.m. Visit to wharf and warehouse in London Dock, by kind permission of Mr. Frederick Palmer, C.I.E., M.Inst.C.E., Engineer to the Port of London Commissioners. 8.30 to 11 p.m. Conversazione in the Galleries of the Royal Institute of British Architects, 9, Conduit Street, Regent Street, W. Members will be received by the President, Sir Henry Tanner, and Lady Tanner. There will be a musical programme, and refreshments will be provided. Ladies are invited. Attention is specially called to the fact that arrangements have been made to limit the first annual dinner to members and a few visitors to the number of 100, so that early application should be made for tickets. The secretary, Mr. H. Kempton Dyson, desires to be informed by May 27th of intention to be present at the conversazione or at the dinner.

AN INTERESTING BARREL ROOF.

A small but interesting reinforced concrete barrel roof, which has recently been carried out at the new Council School, Bovey Tracey, Devon, is here illustrated. The primary object of the flat arched roof was to permit of cross ventilation

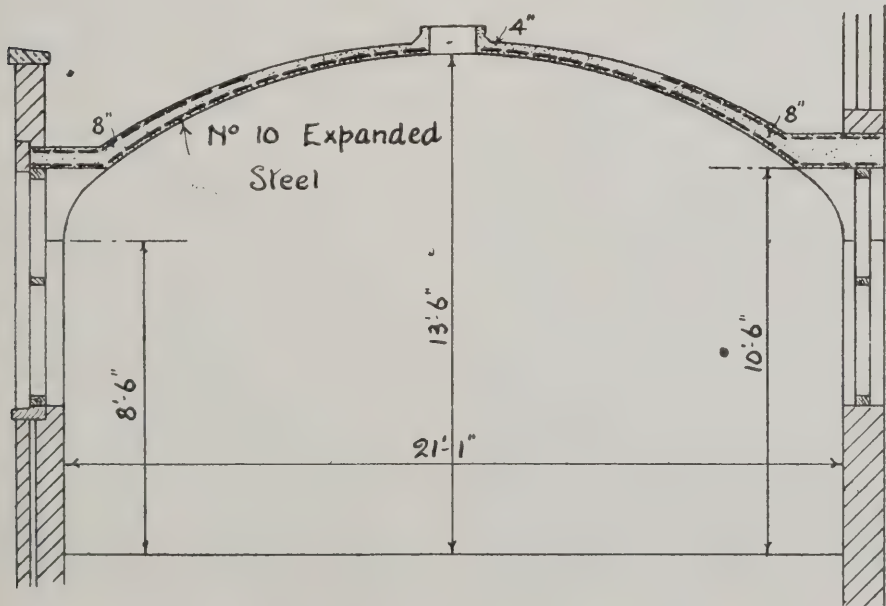
to the adjoining class-room as shown in cross section below. The roof is of reinforced concrete throughout, the reinforcement consisting of expanded steel. No tie rods are used. The thickness of the concrete and the general construction are shown in the detail figure, while the photographic view shows the interior of the



Cross-Section showing arrangement for Cross Ventilation.



View of Soffit.



Detail showing Reinforcement.

REINFORCED CONCRETE BARREL ROOF TO SCHOOL AT BOVEY TRACEY, DEVON.

roof. The architect for the building is Mr. Percy Morris, A.R.I.B.A., Education Architect to the Devon County Council, Exeter. The details of the reinforced concrete work were prepared, and the expanded steel supplied, by the Expanded Metal Company, Limited, York Mansion, York Street, Westminster, S.W. The floors and flat roofs throughout the building are also on the Expanded Metal Co.'s system.

Alterations are being carried out at 27 and 28, Little Trinity Lane, E.C., for the General Electric Co., Ltd., by Messrs. E. A. Roome and Co., 36, Basinghall Street, E.C., and Homerton, N.E., under the superintendence of Mr. Eustace L. Haynes, architect.

At a recent meeting of the British Reinforced Concrete Engineering Co., Ltd., of Manchester, the shareholders unanimously sanctioned a large increase of capital. The secretary reported the acceptance of several important contracts in Britain, and a large increase of foreign orders.

THE REINFORCED CONCRETE
PIER AT SWANSCOMBE.*

BY C. PERCY TAYLOR, Assoc. M. Inst. C.E.

The gradual development of the Associated Portland Cement Manufacturers' Swanscombe works since the commencement of their rotary plant in 1899 has resulted in a very large increase in the capacity of the works, and necessitated considerable enlargement of the wharves, more especially for the loading of cement into steamers and sailing ships direct.

The most important point was the provision of a deep-water pier, and when the problem was first put to the author in 1906, a careful examination of the existing wharfage, which lies on the Thames just below Greenhithe, and a survey of the river bed in the vicinity, indicated that while a depth of 17 ft. at low water spring-tide could be obtained at a distance of about 100 ft. from the existing wharf front, any greater depth could only be secured by a very much longer projection owing to an extensive flat existing in the bed of the river at that point. These circumstances led eventually to the adoption of an L-shaped concrete pier, with a frontage of 130 ft. and having a depth 17 ft. at low water, and 37 ft. at high water (spring-tides). A timber dolphin was constructed about 30 ft. from the up-river end for a mooring, and also to form a protection against any shipping which might get adrift. No dolphin was necessary at the lower end as—owing to a bend in the river—the tide always sets downwards at this point during both the flood and the ebb.

A general description has been presented to the Institution of Civil Engineers (Paper No. 3,830) by Mr. Robert G. Clark, who was appointed as assistant to the author for the design and execution of the work, and Mr. O. Faber. It is not proposed, therefore, to deal with the pier in a general way except in so far as is necessary to explain certain special features.

Owing to the wharf being situated about three-quarters of a mile from the works, the cement, whether in sacks or casks, had to be transported from the warehouses to the wharf in covered wagons. It was necessary, therefore, for these wagons and the locomotives to go direct to the pier in order that the cement might be loaded with a minimum of handling into ships and barges alongside. The wagons weigh when fully loaded 10 tons, and the wheel

base is 4 ft. The locomotives weigh 20 tons, on a wheel base of 5 ft. To provide for all contingencies it was decided to design the pier to carry the maximum number of locomotives or wagons which could possibly be put on it.

In calculating the bending moment of the beams and slabs, all live loads were increased by 50 per cent. This was primarily done to allow for vibration and shock, and it was also thought that if later experience with this and similar structures indicated that such an allowance was not necessary it would permit of heavier loads being carried on the pier should they at any time prove necessary.

The foundations consist of thirty-two columns, which, except at the corner, were constructed in pairs on 25-ft. centres, the pitch longitudinally being 28 ft. Each pair of columns is connected just above low-water level by a horizontal brace and at the top by a cross-beam. Between the last three pairs of columns at the outer end of the pier there is in addition a reinforced diagonal strut. Except at this end of the pier, however, it was considered that the L shape of the structure as a whole secured sufficient stability, and in actual practice this has proved to be the case.

The top cross-beams are extended at each end to form a cantilever, and into them are built the ends of the nine rows of longitudinal beams. The position of these was arranged to suit the rails, the original intention being to have a full load along each side of the pier with cranes carried on gantries spanning the trucks, so that vessels could be loaded on each side direct from the trucks. The columns were placed under the centre line of these two full roads, their tops being widened out so that the pair of beams carrying each full road were supported direct on the columns, and the span was reduced to 23 ft. The middle road was carried on the three centre beams, the distribution of the load being assisted by the introduction of a reinforced cross stiffener midway between the pair of columns. These three beams have a longer span, but carry less load individually, the bending moment at the centre of each being the same as that of the shorter beams. This allows of all the beams being of exactly similar design. The outer beam on each side is also similar and of sufficient strength to enable tip wagons to be handled on a road at the edge of the pier for loading materials in bulk if necessary.

It was ultimately decided to restrict the loading of vessels almost entirely to the

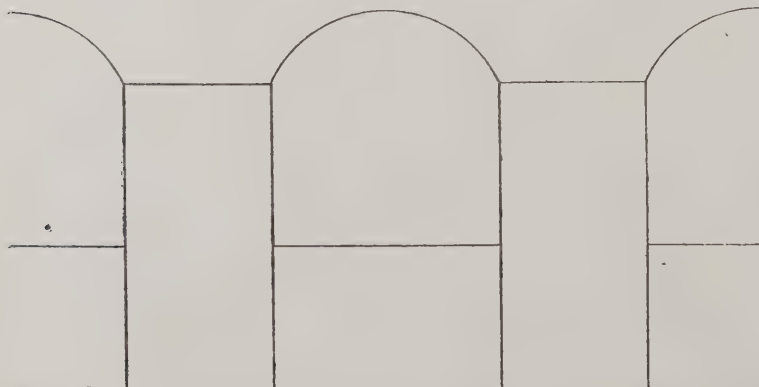
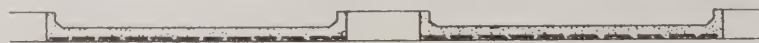
down side of the approach and the outer face of the pier, it being thought more advantageous to increase the facilities at these points than to make use of both sides with less convenience. The "full" road at these points was therefore done away with and a platform constructed, with its surface at the level of the truck floor. This enables the casks and sacks to be discharged direct from trucks in a minimum of time. Loading cranes—which run on rails at the same level—handle the cement from this platform.

Experimental borings in the neighbourhood showed that the bed of the river consisted of a thick layer of mud overlying ballast with chalk below, and that a good footing for piles was not likely to be reached at less than from 60 ft. to 70 ft. from the deck level of the pier. For this reason it was desirable to use a construction which involved a minimum of long piles. The other chief idea underlying the designs adopted was the desirability of carrying the full diameter of the columns right down to the bed of the river without necessitating the deposition of concrete through water. In the author's opinion, the practice frequently adopted in similar structures of depositing concrete inside a shell through a considerable depth of water down a shoot produces a concrete of very questionable strength. Bearing in mind, therefore, the desirability of depositing as little concrete as possible through water, Mr. Clark worked out a system of constructing the columns in which the concrete carrying the weight of the structure was in the form of blocks moulded on shore and matured before being placed in position.

In the general arrangements for constructing the pier, the main idea is the avoiding of false work—the working platform being supported entirely on the permanent structure previously completed. Six heavy pitch-pine baulks about 70 ft. long were carried on timber framings supported at first on the wharf and later on the top of the completed columns. The overhanging ends of the baulks were stiffened by raking struts, which rested on a cross timber attached to the base of the columns just above low water and reached to another cross timber underneath the ends of the baulks. The main timbers were so placed that the blocks of the columns could be lowered between them. A Scotch crane was erected over the backs of the long baulks and was operated by one drum of a Lidgerwood winding engine. The other drum was used for pile driving, both being fitted with the Lidgerwood patent friction attachment. This was found a most convenient arrangement, the one crane carrying out practically all the operations necessary for the construction of the pier, including grabbing, handling the pile driver and piles, building up the columns, and lowering them into place, also placing the temporary steel joists and the main longitudinal beams.

The design of the columns provided for blocks laid one on the other surrounding a central pile, the blocks being keyed together by a recess and projection and also by rails passing through vertical holes around the central pile. The blocks were further strengthened by $\frac{3}{4}$ -in. round rings of about 4 in. less in diameter than the block built in about every 8 in. The only concrete which had to be deposited under water was that used for filling around the pile and the rails. The quality of this was not of such great importance as that of the mass of the blocks.

The central pile alone was not sufficient to support the total weight to be carried by each column—about 150 tons as a



REINFORCED CONCRETE ROOF, BOVEY TRACEY: LONGITUDINAL SECTION. 1

*Portion of a paper delivered before the Concrete Institute on April 6th.

maximum—but, on the other hand, the carrying of more than one pile through the column would have necessitated either a very large diameter or else a block with very little solid material in it. It was therefore proposed to rest the base of the column on some additional piles driven around the centre one and cut off at about ground level. In order to secure ample rigidity for the connection between the piles and the column, the bottom blocks were made in the form of a hollow shell. These were first made in reinforced concrete throughout, in the belief that the bed of the river would be sufficiently soft for them to be forced through the upper layers to form a key. Experience with the first few columns, however, indicated that this was not the case, and afterwards the sides of the shells were made of steel plate fixed to the reinforced concrete top. Further to increase the rigidity of the column base, a hollow was grabbed out in the bed of the river at the site of each column, so that the top of the shell-block actually came about level with the bed of the river, the hollow being afterwards filled with concrete in bags.

The driving of the additional piles and the cutting of them off at the level of the ground was a simple enough operation in the first few columns above low water, but it would doubtless have proved costly both in execution and timber when working in deep water. It was therefore decided to try a system of dollying them down to a dead level, and this was found by experience to work very well indeed.

The author having dealt with the details of construction, a discussion ensued, in which the following gentlemen took part:—Mr. F. E. Wentworth Sheilds, Mr. E. P. Wells, Mr. Oscar Faber, Mr. Alfred Brooks, and Mr. W. G. Kirkaldy.

GRAPHICAL REINFORCED CON- CRETE DESIGN.

Graphic methods are finding ever increasing favour among practical mathematicians, and with good reason, as indubitably they lend themselves very conveniently to quickness, clearness, and precision. The method is in great favour with reinforced concrete specialists, and Mr. John A. Davenport, when the report of the R.I.B.A. Joint Committee on Reinforced Concrete was issued in 1907, worked out the theory for reinforced concrete beams, columns, etc., using their recommendations as bases, and constructing diagrams for use in design. These diagrams he has found "of the greatest use in saving time and in preventing mistakes," and has been consequently induced to publish them. They consist of four plates (24 ins. by 19½ ins.), printed on an agreeable tint, which is ruled into decimally subdivided squares, and comprising eighteen figures, representing calculations for bending moment, shear force, singly and doubly reinforced beams, and columns. Accompanying the diagrams is a 48-page pamphlet, in which the diagrams are described, and the methods of calculation are expounded. Illustrative examples are worked out, and incidentally a great deal of useful information is involved. Doubtless many calculators may prefer to work out their own graphs; but, even so, this handy work would prove exceedingly useful as a basis of operations; and in other cases its independent utility is very obvious.

*Graphic Reinforced Concrete Design. By John H. Davenport, M.Sc., B.Eng., A.M.I.Mech.E. London: E. and F. N. Spon, Ltd., 57, Haymarket.

TERRA-COTTA AND CON- CRETE AND STEEL CONSTRUCTION.

It has been urged that there is no reason why Leeds should not become a White City, or London a multi-coloured one; the means being no longer denied them. Leeds is especially mentioned, not because it is more grimy than many another that could be named, but because it has attained to prominence in the controversy on terra-cotta; London, because it is so often cited as incomparably the most dully drab of capitals. Leeds has done much to draw attention to itself in this connection. Having tired of its soot-coated buildings, it can now show us many on which the grime need not be allowed to accumulate. They have washable faces. What is equally important, at least from the æsthetic point of view, is that the three strongest objections to terra-cotta have been overcome. It no longer glazes, and the blocks suffer much less from contortion in the firing, and therefore the joints need not be so large and uneven as at first they were. The strength of the objection on these grounds is not unquestionable.

Architects have, in fact, become quite reconciled to terra-cotta. This was evident during the Leeds discussion a few months ago, when Mr. W. H. Thorp, F.R.I.B.A., thought it would be very serviceable in a manufacturing city like Leeds, especially as a facing for buildings of reinforced concrete construction. Mr. Percy Robinson, F.R.I.B.A., besides noting its adaptability for reinforced concrete buildings, and the advantages it offers in the matter of cleanliness, mentioned its superior cheapness as compared with stone. He was also of opinion that the material, if its limitations are realised, is capable of sound artistic treatment. Mr. Sydney D. Kitson, M.A., A.R.I.B.A., pointed to the example of

Canada, where terra-cotta is extensively used and withstands the keen and prolonged frosts of that climate. He agreed that it goes very well with reinforced concrete, and added that "most artistic structures of the neo-classic order can be erected in this way."

The severe mechanical accuracy possible with machine-dressed stone is not universally worshipped. There are even those who prefer the less prim, formal, and frigid effects of brickwork and other forms of burnt earth.

Two of the architects cited above—Mr. Sydney D. Kitson and Mr. Percy Robinson—are represented in a handsome album of photographic views of important buildings, recently erected, in the construction of which the products of the Leeds Fireclay Company, Ltd., of Burmantofts, Leeds,—“Marmo,” “Vitreous,” and “Ordinary” terra-cotta—have been employed. In the introduction they point out that the tendency of the present day is distinctly favourable to the erection of buildings which will help to brighten and add colour to the streets of large centres of population. About a score of buildings are shown, and they seem to have been very happily chosen with a view to demonstrating the marked diversity of style and treatment to which the materials easily lend themselves. One of the views—that of new premises for the Michelin Tyre Co., Ltd., in the Fulham Road, Chelsea (M. F. Espinasse, architect) is printed in colours, to show the polychromatic effects of the variously tinted Burmantofts Marmo employed. Other buildings illustrating the use of Burmantofts Marmo are—Atlas Chambers, Leeds (Messrs. Perkin and Bulmer, architects); Grapes Hotel and Paragon Chambers, Hull (Messrs. Freeman, Son, and Gaskell); Post Office, Leeds (Mr. G. D. Martin, F.S.I., and Mr. Sydney D. Kitson, M.A., F.R.I.B.A.); Metropolitan Railway Station, St. James's Park (Mr. H. W. Ford); Electric Palace, Sheffield (Messrs. Hicton and Farmer); Messrs.



Y.M.C.A. BUILDING, MANCHESTER. WOODHOUSE, CORBETT, AND DEAN, ARCHITECTS.

Wright's drapery premises, Middlesbrough (Messrs. Moore and Archibald); Scottish Union Offices, Leeds (Messrs. Perkin and Bulmer); Messrs. Thorntons' (indiarubber manufacturers) premises, Leeds (Mr. Sydney D. Kitson); and Messrs. Simpsons' (seedsman) premises, Doncaster (F. Norman D. Masters, M.A.). Burmantofts vitreous terra-cotta is represented in—Lancaster House, Princess Street, Manchester (Mr. Harry S. Fairhurst, A.R.I.B.A.); the Central Fire Station, Manchester (Messrs. Woodhouse, Willoughby, and Langham); in the Albert Hall and Aston Institute, Manchester (Messrs. W. J. Morley and Sons); and in the Metropolitan Railway Station at Walham Green (Mr. H. W. Ford). Terra-cotta and faience are shown in the Co-operative premises at Barnsley (Mr. A. H. Walsingham); and in the French Hotel, Worksop (Mr. F. Hopkinson); and Marmo and terra-cotta are combined in the Y.M.C.A. building in Manchester, designed by Messrs. Woodhouse, Corbett, and Dean. In Messrs. Hepworth's large premises at Leeds (Mr. Percy Robinson, F.R.I.B.A.), terra-cotta is used both constructionally and decoratively. The list of the views in the album is here given in full as affording a useful indication of actual examples in which the effective use of these materials may be seen. Londoners will be glad of the additional information that Marmo is used for the elevation for the new building for the Armourers' Company, in Copthall Court and Draper's Gardens (Mr. Alexander Graham, architect), while the new premises in Fleet Street for Messrs. J. Lyons and Co. (Messrs. Brown and Barrow, architects) are also executed in Burmantofts Marmo.

This material has a matt surface, and is produced in a variety of colours, as well as in the white. The vitreous terra-cotta is made in many shades of ivory, buff, stone, etc., and both for this and for Marmo great weather-resisting qualities are claimed, and both materials are easily and cheaply washed. Hard-fired terra-cotta does not disintegrate, and it is of course a fire-resisting material of the highest class. But the quality which chiefly distinguishes it is its cleanliness. So long as the smoke problem remains unsolved, this quality must render dense-surfaced earthenware a most convenient material for the facing of buildings in smoky cities, since it provides two important hygienic factors of town life—cleanliness and cheerfulness. In steel construction, and for the facing of reinforced concrete structures, it may be said already to have taken a leading position; and its suitability for these services is beyond controversy.

IRON AND STEEL INSTITUTE.

At the annual meeting of the Iron and Steel Institute, sixteen papers were presented. One of the most important was that by M. Felix Daubiné and M. Eugène V. Roy, giving details of "A Process for the Desiccation of Air by Calcium Chloride," as employed at the Differdange Works, where the problem was to desiccate the whole of the air required for the blowing of a blast furnace of 150 tons per 24 hours. The installation had cost a little less than one quarter of what would have been the cost of an installation for desiccation by means of refrigerating machines. One man for the day shift and one for the night shift were sufficient to handle the apparatus, which was of the

most simple description. The expenses of working were thus greatly reduced.

Another important paper was one entitled "Notes on the Welding Up of Blowholes and Cavities in Steel Ingots," in which the author remarked that in general terms "welding" might be described as the crystallizing into union of two solid metallic surfaces when they were brought together under suitable conditions. In perfect welding there was no visible joint, for the line or plane of junction was occupied by crystals, portions of which belonged to one piece of metal and portions of the same crystals to the other. When the boundary of the crystals was coincident with the juxtaposed plane surfaces, it was evidence of non-welding, which was equivalent to saying that unless the crystals became common to the two pieces there was no welding. It was well known that iron and steel would crystallize or weld together at temperatures far below the so-called welding point, as had been proved by Coffin and others, and the author described some systematic trials he had made with steels of varying and given composition with the object of determining at what temperatures they would actually unite. Liquid steel gave off gases during the process of cooling, and continued to yield gas while plastic; these bubbles could not escape, and the cold metal was in consequence always more or less "honey-combed." . . . Judging from the evidence advanced it seemed certain that if the blowholes in steel ingots were subcutaneous and the heating of the metal was sufficiently high, say 1,000 deg. C. and above, and the ingots were then rolled or forged, they welded up completely, unless the cavities themselves contained foreign matter. The wash welding, as practised in Sheffield, and the heating and rolling of steel for rails and billets effected this. It was doubtful, however, whether pipe cavities could be so easily welded.

TRADE AND CRAFT.

A New Down-draught-Preventing Chimney-pot and Ventilator.

Given a rationally constructed flue, the best cure for that perfectly intolerable nuisance, the so-called "smoky chimney," is a good cowl. The patterns available are countless, and in their varying degrees of efficacy they are good, bad, and indifferent. Some of the non-revolving type behave admirably in certain sets of the wind, and abominably in others—so that, in a perversion of Hamlet's phrase, they may be said to be mad when the wind is nor'-nor'-west, though sane when it is southerly. A few there are that are so cunningly devised as to defy the elements and turn every breeze to advantage. *En revanche*, some of the most efficacious are among those that are the most unsightly. A new down-draught preventing chimney-pot and ventilator that we have had recent opportunities of examining, both at the Building Trades Exhibition and at the inventor's offices, seems to us to combine the maximum of efficiency with a not uncomely form. In it the openings are so devised that every air-current, no matter what its direction or its force, is instantly converted into an up-draught. This, of course, is the common aim; but its realisation is seldom so completely demonstrated as in the case of the pot which has been produced by Messrs. John Davidge and Company, of 6, Holborn Viaduct, E.C. To a model of the pot-head is attached a glass tube, in which

the behaviour of a loose wad under variously presented currents of air, produced by an electric fan rotating on the horizontal plane, may be observed. The head is successively presented to the fan in every possible position relatively to the impact of air, and the invariable result is that a strong up-draught is created in which the wad rises briskly every time on a strong up-draught, in response to a strong external down-draught received by the head held at various angles to the fan. It is thence perfectly obvious that the head of the pot is so constructed as to deflect every current of air that can beat



Elevation.



Cross Section.

against it at any angle, in any volume, from any direction, and convert it into an up-draught in the flue. The cross-section here shown may serve to indicate how this object is accomplished; but it may be added that there is more in the arrangement than meets the eye, as, after the theory had been perfected, practical experiments suggested several modifications which, though apparently very small, nevertheless had an important effect on efficiency. As will be seen from the elevation, the pot is neither obtrusive nor unsightly, and it may be obtained in various patterns and sizes, and either in earthenware of various colours or in metal, while any special pattern can be made to the architect's design. The vendors are able to state that the pot has given full satisfaction in every instance in which it has been employed.

FEDERATION NEWS.

Midland Centre.

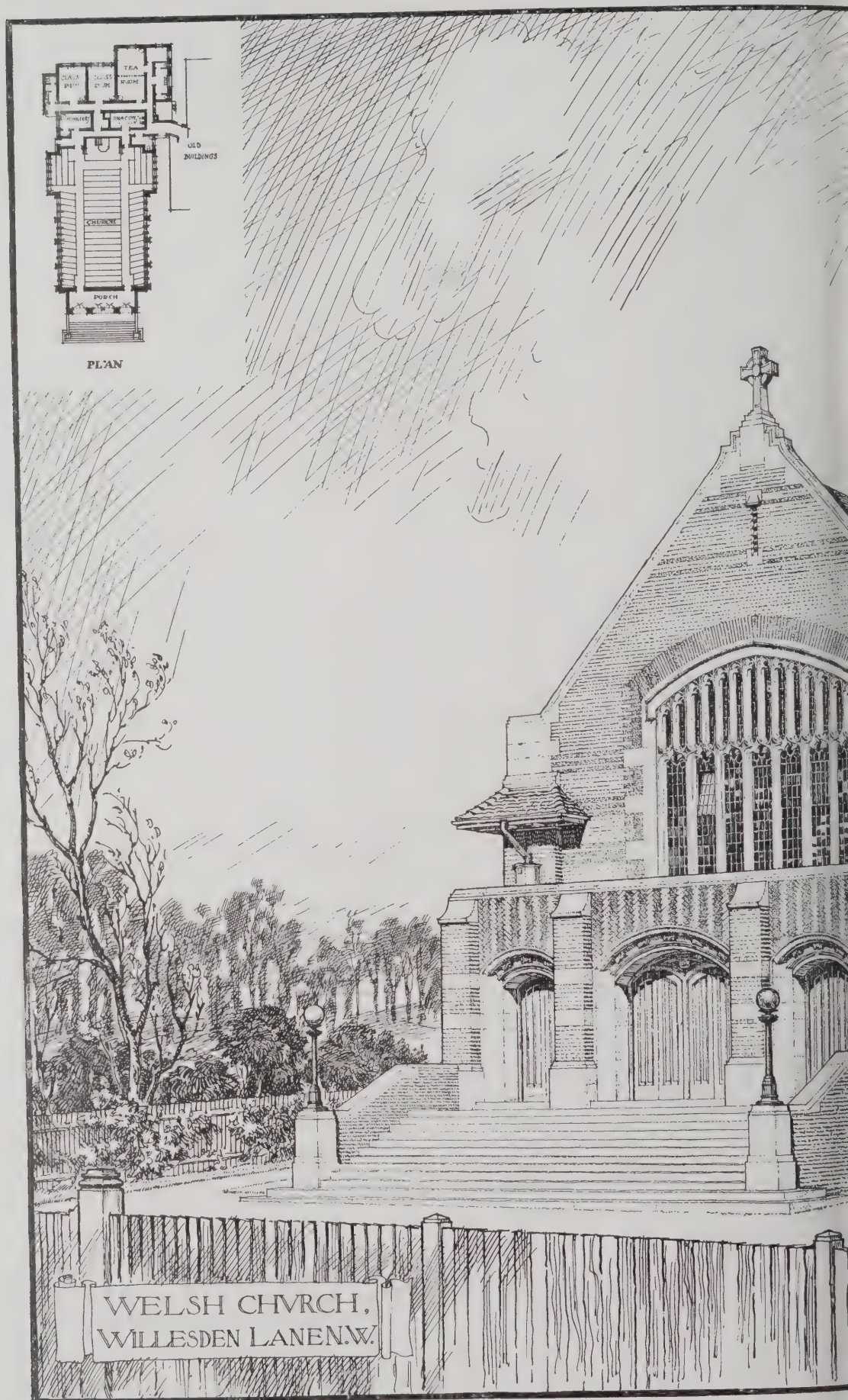
The sixth annual meeting of the Midland Centre Conciliation Board was held at the St. James's Hotel, Derby, on Tuesday, May 9th. Mr. J. B. Whitehouse (Birmingham) presided, and all the members of the Board either were present or had sent substitutes. The first business was to consider an appeal from the Mansfield Local Conciliation Board in reference to a notice given by the bricklayers for an advance in the rate of wages (8½d. to 9d. per hour). A resolution to the effect that the bricklayers' application be granted was defeated by one vote. The rate of wages will therefore remain as at present—8½d. per hour.

The secretary's annual report stated that three special meetings of the Board had been held since the last annual meeting. One new Local Board had been formed in the Centre during the year, at Mansfield. Such Boards now existed at Birmingham, Bromsgrove, Burton-on-Trent, Derby, Leicester, Mansfield, Newark, Nottingham, Redditch, Stanbridge, Walsall, West Bromwich, Wolverhampton, and Worcester. The North Staffordshire Master Builders' Association being no longer affiliated to the Employers' Federation, the Local Board which was formed there has now no share or lot in the National scheme. The report went on to refer to the changes made in the rules by the National Board, and closed with an appreciation of the services of the chairman (Mr. J. B. Whitehouse) who during five out of the six years in which the Board had existed had presided over its meetings and had done much by his ability, courtesy, and tact, to facilitate the transaction of business and to enhance the value and dignity of the Board. The report was approved and adopted.

The following appointments were made for the ensuing year:—Chairman, Mr. J. B. Whitehouse (Birmingham); vice-chairman, Mr. J. Cragg (Leicester); Employers' Secretary, Mr. F. W. Amphlet (Birmingham); Operators' Secretary, Mr. J. Blount (Derby).

It was decided to hold the next annual meeting at Nottingham.

The National Board were recommended to admit the builders' labourers to the Conciliation Boards on the same terms as operatives of the skilled trades.—FRED W. AMPHLET, Employers' Secretary.





THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 31st, 1911.

Volume XXXIII.

No. 853.



RUSHMERE LODGE, NEAR IPSWICH: DETAIL OF BAY WINDOWS ON
GARDEN FRONT. CHARLES SPOONER, F.R.I.B.A., ARCHITECT.



This window forms part of the new work which has been executed at the Oxford and Cambridge Club—an old building by Smirke. The main staircase was refaced with Skyros yellow marble, the styles and rails being of statuary marble, divided by sunk beads in Keene's cement. The surround to the window is of pine, painted white. Messrs. Holland and Hannen were the general contractors, Messrs. J. Whitehead and Sons, Ltd., executed the marble-work, and Messrs. Geo. Jackson and Sons, Ltd., the plasterwork.

NEW WINDOW ON STAIRCASE, OXFORD AND CAMBRIDGE CLUB, PALL MALL, LONDON.

PROFESSOR REGINALD BLOMFIELD, A.R.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

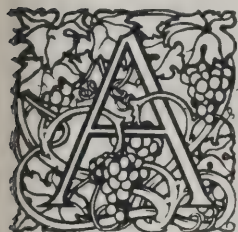
MAY 31st, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 853.

NOTE : *The List of Contents will be found on page V. of the front advertisements.*

American Architecture : Past, Present, and Future.



RATHER remarkable lecture was given at the Society of Arts last Wednesday, by an American architect, Mr. Frank M. Andrews, on the subject of the architecture of his own country ; remarkable in this way, that it was not a mere collection of illustrations of American buildings (though

the lantern illustrations were numerous and effective), but was a very well-written review in brief of the history of modern American architecture, and a critical summary of the influences and conditions under which the architecture of the United States has been developed.

It is not very easy to realise, until one's attention is specially directed to the point, how entirely different were the circumstances in the United States from those under which any European national architecture arose. Not only was this a country with no architectural past or tradition, except such as the first Colonial settlers brought over with them, but it was a country with no class distinctions, no royal or noble patrons of the arts. As Mr. Andrews put it—"Pomp and display, class distinction, and the exaltation by rank or otherwise of an individual or group, which in Europe played so important a rôle in the development of its civilisation, were not to find place in this new scheme of things ; and as a natural corollary, almost the entire vocabulary of architectural thought was automatically abandoned." And in fact, a society occupied in elaborating a new system of government on a basis of its own, with no reference to any political precedent, could hardly have had much time or thought to spare for art. The development of art comes only when the immediate practical necessities of life have been provided for.

In domestic architecture the Colonial period, as we all know, did provide a kind of style of its own, the interest and character of which lay mainly in the fact that it was the English late Renaissance carried out in different materials from those in use in England, wood taking very largely the place of stone, so that we have prim wooden colonnades and porticos, in which the traditional columnar order assumes new and more slender proportions, permissible and even suitable in wood ; and some of the small churches and chapels of the Colonial period have a naïve and simple picturesqueness which seems also to partake of the character of domestic architecture. When the new State was formed, it was, however, evident to men with the broad views of Washington and Alexander Hamilton (the latter of whom may almost be said to have been the brains of Washington) that a representative house of State procedure must have something of an imposing effect, and as there was no time to evolve any special treatment, or anyone probably capable of doing so, the European form of a building with a colonnaded portico and a dome was adopted. Although the dome is not a real masonry construction, the Capitol at Washington is really, considering the circumstances, a remarkable success ; after all the time that has elapsed and the new ambitions in architecture that have been

developed since its erection, it still remains a very dignified and well-proportioned building, not unworthy of its position and function ; and it is interesting to note that it has become, in its general treatment, the model for the similar buildings, "State Capitols," which are to the separate States what the Washington Capitol is to the whole Union ; the accepted form for a State Capitol being a classical building with a central dome.

But in spite of this one success in a national building, there ensued a long period during which building in general was entirely utilitarian. "Buildings were an object of pride, and aroused interest and appreciation, only because they expressed in size, materials employed, and numbers, the growth of a community or the prosperity of the individual." Indeed, the architect for a long period seems to have been almost suppressed, or was at best "a dubious being," who expounded useless theories about art and other effete things of European origin which had no interest for the building trades and their political henchmen. Mr. Andrews tells us that the most prominent influence in leading to a better state of things was the Columbian Exhibition of 1893 at Chicago. One can understand that. For the first time on American soil there were collected together a number of buildings, designed by architects who were well acquainted with the best models of classical architecture, and knew how to design ; and the result was to sow in the public mind a conviction that architectural beauty and nobility of design was something worth striving after, and which it was possible to obtain. The discovery of the Ecole des Beaux-Arts was another important, though to our mind somewhat doubtful, step in American architectural education. That it has had immense influence in refining design in American architecture, especially where a Renaissance type of design is employed, was rendered amusingly evident by a photograph of an official building, erected in the sixties, in what was supposed to be French Renaissance style, but which appeared almost ludicrously bad in comparison with the best American architecture of the present day. But the manner in which the American architects have thrown themselves into the arms of the Ecole des Beaux-Arts, even down to imitating the very manner and make-up of the French drawings, is rather absurd, and has (so far) taken away from them the chance, which they might have had, of working out a modern Classic school with something of their own in it, instead of endeavouring to become, as it seems to outsiders, more French than the French themselves.

But this French school of design seems to be exhibited only in the class of buildings which have no connection with business ; such buildings as churches, public libraries, museums, etc. In these one sees American architecture at its best ; superior to much English architecture exhibited in buildings of the same class. But the fact seems to be that, for any building erected for commercial purposes (and that means for by far the greatest number of buildings erected in American cities), the high building with steel framework and an illusory outer skin of constructional masonry, represents American architecture. The illustrations shown after the lecture were sufficient to indicate that this is now the

accepted way of building in all American cities; that it is far more widespread than many of us in England had supposed, and even town halls in tower form are now becoming common. Mr. Andrews tells us that "this type of building has come to stay because of its attributes of structural safety, economy in first cost and of upkeep, and its general suitability to our modern conditions"; and he went on to propound the question whether these structures are beautiful, or can be made so, and thus become works of art?

To look at one or two practical questions first, we may point out that the "structural endurance" of this type of building has yet to be proved. Not one of them is more than about thirty years old, which is nothing in architectural endurance. The Pantheon is nearly two thousand years old, and is in good structural condition still. Of course, no such lapse of time is looked for in commercial buildings in a commercial city; we do not know whether New York would be in existence on the same site after a thousand years. But in any case steel structure is not so durable as brick and stone building, and we have yet to learn how soon this may become apparent. Nor do we feel at all satisfied as to the superior safety of these buildings. Inflammable material within their walls is reduced to a minimum, perhaps, but there must be a certain amount of it, and once a fire commenced in the lower storeys of one of them, we should think they are among the most dangerous buildings in the world under such circumstances. And there is the question also of the hygienic effect on a city of greatly increasing the height of buildings without increasing the width of the streets. Great increase in vertical height ought to include corresponding increase in horizontal spacing. All these practical points have to be taken into account. The photographic view of "Broadway" caused some amusement among the audience, so completely did the picture seem to contradict its title. "Broadway," indeed! It appeared rather like a narrow slit cut between two vast piles of building.

When we come to consider this manner of building from the artistic point of view, it cannot be denied that there is an element of grandeur in it. The view of New York from the harbour recalls to the mind Milton's lines in "L'Allegro":—

"Tower'd cities please us then,
And the busy hum of men."

This is indeed a "tower'd city"; and for the "busy hum of men" nowhere surely is that to be found more incessant than in the commercial quarter of an American city, for all these lofty structures, occupied only by day, are hives of incessant and restless industry, served by the continual ascent and descent of swift and elaborately constructed lifts, or "elevators" as they are called in the American tongue. The effect, as seen in the distant view, is, however, less impressive when the city is entered, for in a city quarter all built in towers the tower loses some of its significance of effect. Then the knowledge of the structure of these tower buildings deducts very much from our respect for them in the architectural sense. It is impossible that the European mind, accustomed to regard architecture as monumental building, can look with sympathy on buildings of which it is known that the whole exterior is a mask which has nothing to do with the real structure, except so far as it may act as a useful preservative screen to protect the steel-work from the action of the weather. This is the more the case because the stone screen is too imitative of the usual forms of masonry architecture. To render it truthful, the exterior design should be such as to convey the impression that it is only a screen surface; and no such attempt seems to have been made so far. The whole exterior design of the American tower building is an illogical concession to an architectural tradition based upon a totally different kind of structure. It is possible that a more truthful and monumental kind of tower building might be produced by the employment of concrete-steel structure, in which the exterior face would represent the real structure, instead of being a skin. For the highest of high

buildings it would not perhaps be so convenient to carry out, but we gather that it has been adopted successfully for some very high ones, though not for the highest. The employment of that system ought to lead to a complete departure from traditional masonry style, which, in fact, could hardly be imitated in concrete-steel.

We do not see that any serious attempt has been made so far to evolve a characteristic style of exterior treatment for either the stone-faced steel building or the concrete-steel one; nor could such attempt be well made in the system of hurry under which these buildings seem to be erected. The Americans seem to be very proud of the admirable organisation by which their high buildings can be finished in an incredibly short space of time; but great architecture can never be made in a hurry. The general idea for the design seems to be to treat the building somewhat as a vast column, with a ground storey forming the base, then a vertical treatment, and a crowning storey and cornice forming the capital. This is a good idea in itself, but in many cases the basement seems far too light, in architectural treatment, for the mass above it, and the angles of most of the buildings look dreadfully weak, owing to the utilitarian persistency in crowding windows close up to the angles.

In spite of the present satisfaction of the American architects and public with this characteristic architectural growth of their soil, we should not be surprised to find that there may presently arise a reaction against the system, the more so in view of the large and enlightened interest in architecture which is displayed in American journalistic and periodical literature, where the subject is discussed with a fulness and ability which we are quite unaccustomed to in English periodicals; and it may some day be discovered that man was not sent into the world to extract the greatest possible rental return from a given area of ground. As to the more artistic class of buildings which are still built of masonry or brickwork on the traditional lines of architectural design, we should be glad to see American architecture, good as it is at present in this class of building, emancipate itself a little more from the sway of the French *Ecole des Beaux-Arts*, and endeavour to think and feel a little more for itself.

"The Truth About Gothic."

MR. G. K. CHESTERTON on architecture is always good reading. Too often he allows the gargoyles to overwhelm his thesis, and this obsession has given currency to the false accusation that "he sees the world as one great gargoyle." He has just seen some more gargoyles, but, for once in a way, has not permitted them to take full possession of his soul. The other day, in the town of Lincoln (so he records in the "Daily News"), he suffered an optical illusion which accidentally revealed to him the strange greatness of the Gothic architecture. He is willing to admit the truth of the observation "that it is the liberty of the Middle Ages in the use of the comic or even the coarse that makes the Gothic more interesting than the Greek," for, he says, "Few of the old Christian cathedrals would have passed the Censor of Plays." He declares that it is not the grandeur of the old cathedrals, but rather their gaiety, that we do not dare to imitate. "We should be rather surprised," he says, "if a chorister suddenly began singing 'Bill Bailey' in church." We should, even if he did not do it suddenly, but with due deliberation after formal notice. "Yet," Mr. Chesterton goes on, "that would be only doing in music what the mediævals did in sculpture. They put into a Miserere seat the very scenes that we put into a music-hall song; comic domestic scenes similar to the spilling of the beer and the hanging of the washing." Certainly they had a coarse sense of humour; but does it quite justify Mr. Chesterton's violent comparison of fundamentally dissimilar things? Hereabouts there is a spasmodic intrusion of "the joy and energy of the gargoyles," but the paroxysm is manfully suppressed, and Mr. Chesterton goes on to tell us that he "never saw what was

the real point about Gothic till he came into the town of Lincoln, and saw it behind a row of furniture vans." It was a moving spectacle. "All of a sudden the vans I had mistaken for cottages began to move away to the left. In the start this gave to my eye and mind, I really fancied that the Cathedral was moving towards the right. The two huge towers seemed to start striding across the plain, like the two legs of some giant whose body was covered with the clouds." Then he knew the truth about Gothic, which is, "first, that it is alive; and, second, that it is on the march." "It is the Church Militant; it is the only fighting architecture. All its spires are spears at rest; and all its stones are stones asleep in a cata-pult. In that instant of illusion, I could hear the arches clash like swords as they crossed each other. The mighty and numberless columns seemed to go swinging by like the huge feet of imperial elephants. The graven foliage wreathed and blew like banners going into battle; the silence was deafening with all the mingled noises of a military march; the great bell shook down, as the organ shook up its thunder. The thirsty-throated gargoyles shouted like trumpets from all the roofs and pinnacles as they passed; and from the lectern in the core of the cathedral the eagle of the awful evangelist clashed his wings of brass." This would seem to be an occasion for extensive underpinning operations; and for the gagging of gargoyles, whose silence is most deafening when they are thirsty-throated.

The New Dining-room, Belgrave Mansions.

GRATELY improved accommodation has now been obtained at Belgrave Mansions by taking in and converting one of the frontage shops on both ground floor and basement. The former coffee-room has been converted into a

smoking lounge with a screened-off corridor leading to the new dining-room, which is about 75ft. in length, and about 19ft. in width, and 13ft. in height. New lavatories and cloakrooms have been provided for both ladies and gentlemen, also a clerks' office on the ground floor, as well as new staircases for both the staff and the visitors' servants, together with a new service-room for dining-room and lounge. A ladies' drawing-room is also a new feature in the social arrangements on the ground floor. The dining-rooms, for there are two, front and back, communicating by an archway, provide for the ordinary daily requirements of the residents and their guests, as well as for occasional private parties and dinners, and for this purpose they can be separately served from the new service-room. The back dining-room has a pleasant outlook on the new garden lately laid out on the back of the mansions. It is a very simply treated apartment, with white panelled walls, with a mantelpiece in Irish green Connemara marble, set off by a background of black Belgian. The front dining-room, of which the preliminary design (since considerably modified) is shown below, while very quiet in its treatment, is more elaborate, having an order of fluted Greek Ionic columns and pilasters with very delicately ornamented capitals. There are two fireplaces, the chief of which is remarkable for some excellent wood carving surrounding the mirror overmantel and the marble enclosure of the grate. The walls are panelled out in sympathy with the architectural scheme, and the flat white finish gives effect to the delicate detail employed. Great improvements have been effected in the basement in reorganising the kitchen and service arrangements. A new dining-room for visitors' servants has been provided, new still-room, service-room, and other conveniences; and both light and air have been everywhere introduced, and the ventilation improved. The work has been



SCHEME FOR NEW DINING-ROOM, BELGRAVE MANSIONS, LONDON. W. ARTHUR T. BOLTON, F.R.I.B.A., ARCHITECT.

carried out without interruption and with a minimum of disturbance to the residents and visitors, and in a remarkably short space of time. The architect is Mr. Arthur T. Bolton, F.R.I.B.A., of Victoria Mansions, S.W., and the contractors Messrs. George Trollope and Sons and Colls, Mr. Lester being the foreman in charge. The quantities were prepared by Messrs. Widnell and Trollope, of 20, Tothill Street, S.W. The constructional steelwork was supplied by Messrs. M. T. Shaw. Pavement and stall board lights, Messrs. Hayward Bros.; sanitary fittings by Messrs. Morrison and Ingram; ventilating electric fan by the Sturtevant Co.; the grates by Messrs. Robbins of Dudley; marble and tilework by Messrs. Van Straaten; locks and furniture, Messrs. Gibbons of Wolverhampton; electric lighting, Messrs. Pearson. The chandeliers were selected in and supplied from Paris. The plaster modelling and wood-carving has been executed by Mr. Rogers at Messrs. Trollope's works from the architect's designs.

A New Japanese National Theatre.

THE Japanese have been celebrating the opening of their new National Theatre in Tokyo. From a modern point of view the new structure is a model creation. Mr. Yokogawa, the architect who designed it, was sent abroad some four years ago to study the latest European and American designs and appointments in theatre construction, and came back with a plan combining all that was latest and best in the buildings he saw abroad. The Imperial Theatre, as it is called, has taken over three years to build, and has cost more than half a million dollars. It would cost at least a million in Europe or America. For completeness of appointment and beauty of decoration the Tokyo Imperial Theatre is regarded as one of the finest in the world. The building is constructed in three compartments, separated by heavy brick walls and stout iron doors. The actors' dressing rooms occupy the rear compartment, the stage comprising the middle one, and the auditorium the third. The iron doors and screens between these compartments are all controlled by automatic devices, closing them at once in case of fire. In addition automatic fire-sprinklers are installed in convenient places for use at a moment's notice. The seating capacity is about 1,700. On either side of the stage and level with it are two magnificently furnished boxes for the use of the Imperial family. The general scheme of decoration for the auditorium is white and gold with pale blue background. Immediately above the stage arch is an elaborately painted scroll in green and gold, and above this a painting in oil by Wado, the famous Tokyo artist. The curtain is rich green satin velvet, with a brocaded border in white and gold. The stage, which is 60ft. wide by 53ft. deep, has a revolving centre 48ft. in diameter.

Eighteenth Century Venetian Art.

The exhibiton of "Venetian Painting of the Eighteenth Century," at the Burlington Fine Arts Club, though it affords a curious contrast to our usual associations with Venetian art, is interesting as bringing to our notice two or three painters who are little known, and among these a painter of architecture, Bernardo Belotto, who was a nephew and pupil of Canale (better known as Canaletto), and who painted architecture, as far as detail is concerned, better and more brilliantly than his master. As far as general pictorial effect is concerned, both Canaletto and Guardi are his superiors, but in the representation of the buildings themselves Belotto is superior to them; in his two views of Dresden especially the architecture is painted with an accuracy and brilliancy of effect more like Dutch than Italian painting, and reminding one in fact of Van der Heyde. Among other little-known architectural painters is one Marieschi, whose view of St. Mark's front in one painting is not in good perspective, but his two imaginary compositions, called "Landscape

Capriccio," in which architecture plays a part, are interesting. Among the other paintings exhibited, those of Pietro Longhi are remarkable for their great resemblance to Hogarth, in style both of drawing and subject, though he does not aim at Hogarth's satiric power. Though there is no record, apparently, of Longhi having visited England, it is difficult to believe that he was not acquainted with Hogarth's work.

Housing Activity and a Misconception.

THE Housing and Town Planning Act is beginning to tell. Reports to hand from various parts of the country show that on every hand it is inspiring thought and action. One of the most encouraging signs is the heartiness with which its objects (or some of them) are being supported or promoted by organisations of workers, who, it appears, may be trusted to see that at least the housing provisions of the Act shall not remain a dead letter. There has been held, for instance, in Manchester, a conference of representatives of trade unions, trades councils, and co-operative societies in Lancashire, Cheshire, and the north-western counties, to consider the powers and duties of local authorities under the Act, and the formation of district committees to work on non-party lines "for the wise and active administration of the Act." The conference, which was organised by the Trade Union Committee of the National Housing and Town Planning Council for the district, was opened by Mr. W. Mullin, chairman of the Parliamentary Committee of the Trades Union Congress, who advocated a crusade against slums, and Mr. Harold Shawcross, of Rochdale, suggested that in future trade unions would find a new and useful activity in looking after the housing conditions of their members. At Darwen the Trades Council have been urged by their president to take steps to enforce the provisions of the Act. At Doncaster the Corporation has committed the rather serious mistake of flouting the working-classes by neglecting to invite their delegates to the Town Planning Conference at the Mansion House. The Doncaster Trades Council promptly taxed the Mayor with this neglect, and threatened to invite themselves. The Mayor replied that the conference would consist only of representatives of local authorities having powers vested in them under the Act, and that no other organisation or body would be represented. Thus is manifested precisely the narrow spirit from which the best friends of the Act are most anxious that its administration should be kept free. It may, however, have the good effect of rendering the workers extra keen to exercise their rights under the Act, which gives power to any four inhabitants to lay a complaint and to appeal, if necessary, to the Local Government Board. On the whole, however, it would be more practically advantageous, as well as more morally edifying, to enlist the sympathies and invite the co-operation of the workers, rather than snub them into an attitude of hostility. Fortunately, the Corporation of Doncaster seems to be completely isolated in its absurd misconception of the spirit of the movement.

But the incident is somewhat disquieting. It reveals, on the part of the trade-unionists, as well as on that of the corporation, a disposition to treat the Act sectionally and selfishly, each coterie trying to wrest from it some particular advantage. Looked at broadly, the Act should be advantageous to all, but its true spirit is co-operative rather than competitive, and will not be helped by the frantic struggles for supremacy that seem likely to occur unless or until a more enlightened sense of responsibility is instilled into all sections of the community. The fact seems to be that the spirit in which the Act was conceived, and in which an enthusiastic band of propagandists are endeavouring to have it administered, is considerably in advance of the times, and much educational work has yet to be done before the general public can be expected to live up to the principles of general welfare which it embodies. Architects are well qualified to emphasize those principles, and should not be backward in doing so.

APOLOGIA FOR THE TALL BUILDING.

BY FRANK M. ANDREWS.

At the conclusion of his very philosophical account of American Architecture, in a paper read before the Royal Society of Arts on May 24th, and of which a summary will be reproduced in this Journal, Mr. Frank M. Andrews made a powerful apologia for the distinctively American tall building.

In the field of commercial buildings, he said, we have presented to us our own peculiar characteristic American problem, and out of it we are developing our one positive contribution to architectural form.

Gothic and Greek Features.

Unlike the Gothic architecture, with its organic union of construction and design, it partakes of one characteristic Gothic quality, namely, the emphasis of the vertical and subordination of the horizontal line in composition. But again, it requires a superficial envelope, a simulacrum inclosing and concealing the real structural elements beneath, and in this respect becomes analogous to the arcuated construction of the Romans with its outward application of Greek forms and orders.

Our most unruly problem, the tall building, is, to my way of thinking, the result of the logical working of the law of supply and demand. It is neither fantastic, avoidable, nor useless, and will not yield to adverse legislation, because public necessity formulates a public opinion that will not legislate.

It is amusing to read in the publications of fifteen years ago the diatribes against it and prophecies of its early extinction which were provoked by the modest fifteen and twenty-storey structures of that time. The architect of the then tallest building in New York announced in print his belief that the end of tall buildings was in sight. Structures of twenty-five, thirty, forty, and even more than fifty storeys have been the answer. It furnishes a typical example of practical necessity and mode of existence creating a movement which ends in something distinctively characteristic of a people, and in this instance steel-construction and the tall building is affecting us as did the round arch and vault of the Romans. The business centres of such cities as New York and Chicago, as created to meet the conditions of 1860 to 1870, were soon outgrown, and the necessity for larger and better buildings became apparent. The established business centres could not be, or at least were not, moved, property values and the existing inter-relations in those centres being of too great moment at the time.

This generally prevalent condition produced different immediate results in different sections of the country, which long since have converged into an established common practice.

Skeleton Steel Construction.

In Chicago, we find that the direct causes that led to the first example of true skeleton construction were (a) the necessity for increased height; (b) which the character of the supporting soil rendered impossible on account of the weight of the then prevailing type of massive masonry walls and interior columns, and which could not be overcome unless (c) a system

of construction be devised stronger and of less weight than other types, which was accomplished by the device designated by us as the "Skeleton Steel Construction."

Had this been the only merit possessed by this type, it might have remained a localism of Chicago, or at least it would not have become the highly organised, complex, and widely adopted construction that it is to-day, practically amounting to our accepted type for commercial purposes.

The system, as developed, is a simple one in principle, consisting of supporting columns of steel or cast-iron, braced in all directions and riveted or bolted to the horizontal girders and beams, which not only support the floor construction, but, more important still, also carry, storey by storey, the outer walls of the structure, which thus cease to have constructive value, becoming a thin screen of material that serves to enclose the building and to protect the steel fabric from exposure.

The outer walls being but screens, the masonry supporting nothing, their piers were in consequence easily reducible to a minimum surface width, and the area of glass could thus be largely increased, thereby giving a maximum lighting to the interior, a device rendered necessary by the generally increased height of our buildings fronting upon streets that could not be increased in width. The effect of this condition is manifest in the earlier treatment of the architectural design of these structures, and has become typical of them in the work of the present day.

The walls, being non-supporting, could be reduced to a minimum thickness, thus providing an important addition to the interior area of each floor, and materially increasing the earning power of the building; an imperative necessity because of the rapid rise in ground value in central business districts.

The Influence of the Elevator.

None of this development would have been possible, however, if it had not been for the American type of elevator, which was promptly developed in response to this new demand, and has kept pace with it ever since by evolving new principles of construction and operation necessary to cope with the constantly increasing height of buildings and the enormous increase in service both as to speed and volume of traffic.

These foregoing advantages, meeting our conditions and requirements, led to the general widespread adoption of this system, resulting in the development of remarkable contracting and building skill and organisation, of which we have every right to be proud, and which has produced amazing results as to speed of construction, quality of work, and economy. With our high ground values and the necessarily great earning power of these structures, the saving of time in their erection became a matter of momentous importance, and this necessity led to the creation of the skill and organisation referred to.

This type has come to stay because of its attributes of structural endurance, safety, economy in first cost and of upkeep, and its general suitability to our modern conditions.

While it has belonged to the domain of the architect, becoming the accepted type for our huge hotels, apartment houses, and commercial structures, and under his direction is fast becoming a thing of grace and beauty from a beginning of sprawling ugliness, nevertheless it must be said in all fairness that these structures could not

have been devised without the skill and genius of our mechanical and structural engineering professions, the builders and the skilled mechanics, whose trades have become specialised and developed by this demand, all united in effective co-operation with the architect.

The question is frequently propounded: "Are these structures beautiful, or can they be made so, and thus enter the realm of artistic thought?" In my opinion the answer is emphatically, yes. It is no conclusive argument to decry them because in certain communities people live and pursue their vocations in such a manner as to make this type of building unnecessary, or because, since they have thereby been enabled to restrict the height of all building to a lower level, producing a uniformity of general effect, they can then point to Paris as the grand example of this sort of thing, and claim her artistic virtue as their own. Beauty of this sort is the outgrowth of suitability to local conditions, plus the artistic thought that may be apparent in the means adopted, but it is, after all, only one kind of beauty. There is beyond question the beauty to be found in truthful picturesqueness, when it is a natural outgrowth of conditions inherent to the people, and it can be made quite as respectful of architectural law, and the result of individual effort being made with regard to the effect of the whole, while working in this freedom of spirit, as though it were hemmed in by ironclad restrictions as to height, etc., that are characteristic of certain communities.

Architectural Development.

The development of the exterior treatment of the tall building, architecturally, has been exceedingly interesting, and in the time and space afforded to me in this discussion cannot be described in detail.

Briefly stated, our fundamental principle in design seems to have become established by treating the tall structure as a column with its base, shaft and capital. In all of the best and most pleasing examples of the later work, this element appears, and we find the lower storeys grouped in a single architectural composition supporting a long vertical and shaft-like series of storeys grouped into a simple treatment that carries the eye upward without interruption to the crowning feature of the entire design, which again is a series of storeys combined into the capital, as it were, of the mass. The pleasing variety of thought in the handling of this scheme of treatment is one of the best features, and generally speaking is now characterised by a sober refined self-control and a truly architectural spirit. In the classic feeling of the Italian Renaissance the municipal building of New York is unquestionably one of the best solutions of the problem on these lines that we have, while in the West Street building and in the Woolworth building, both in New York, we have equally good examples of the application of Gothic feeling and detail. Considering its extraordinary height and unusual mass, the design of the Woolworth building is in my judgment an architectural achievement of the highest order. I have referred to these buildings not only because of their architectural merit, but also for the reason that they represent the two broad schools of design which seem most suitable to the problem presented by the tall building, and are, I believe, typically representative of our lines of future development.



HOUSE AT ALVECHURCH, WORCESTERSHIRE. GERALD McMICHAEL, A.R.I.B.A., ARCHITECT.

The Appeal to the Imagination.

In pointing out the consummation of this century and a half of architectural growth in my country, I would have you enter the harbour of the city of New York on a trans-Atlantic liner, and from that point of view for the first time observe the buildings of the lower end of Manhattan Island with their towering and amazing sky-line and mountain-like mass of architectural grouping, picturesquely artistic and truthfully expressive of the spirit of our lives and activities.

I believe that it will grip the imagination of any observer, whether he sees it for the first or the hundredth time, and that he will experience from it that flow of thought and impression which is produced only in the presence of some great and inspiring thing. To me it illustrates the quality and the character of our people, their aspirations, and their peculiar genius in terms of architecture, as do our mountains and valleys, our lakes and rivers, the physical character of our land. Prosperity, wealth, and power we are surely possessed of, and we are as surely acquiring from the artistic wisdom and traditions of Europe that which is useful and good for us to have, and are applying it intelligently to our needs. As a people we are learning to respect and revere Art, and to value its uplifting influence, and with the artistic forces that are ever active amongst us, the future of American architecture will be worthy of high regard.

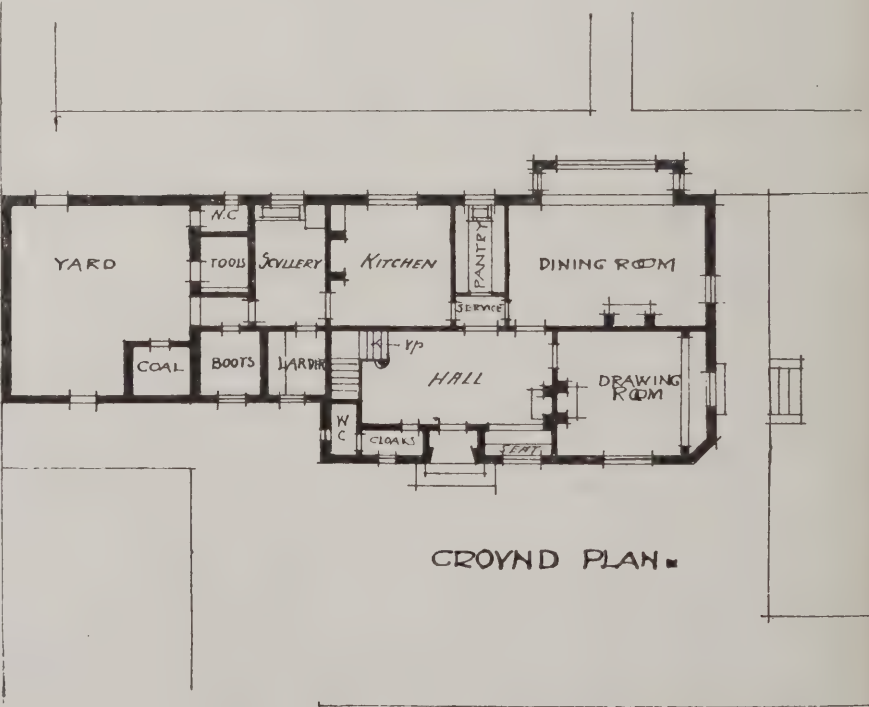
HOUSE AT ALVECHURCH.

This house is situated in charming country with an open view to the Lickey Hills. The situation is rather exposed,

and for that reason the walls were built hollow. Brindled bricks were used for external facings, with sand-faced dressings to arches and windows. The roofs were covered with Hartshill hand-made tiles. The glazing is in leaded squares.

An excellent old staircase was bought in the village and adapted and fitted up inside the new house.

The builder was Mr. Frank Davis, of Moseley. The photograph reproduced above is by Mr. Harold Baker, Birmingham.



COMPETITIONS.

Hall or Park Pavilion, Leicester.

In the competition for a hall or park pavilion to be erected on a site adjoining Victoria Park, Leicester, the assessors, Mr. S. Perkins Pick, F.R.I.B.A., and Mr. E. G. Mawbey, borough surveyor, have made the following awards:—1, Stockdale Harrison and Sons; 2, Mr. H. H. Thomson; 3, Messrs. Langley and Baines.

LIST OF COMPETITIONS OPEN.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

JULY 1. CHAPEL AND SCHOOLROOMS, SWANSEA.—Competitive designs are invited for a chapel, schoolrooms, and class-rooms at the junction of St. Alban's Road and Finbury Terrace, Swansea.—Particulars from D. Walters, 19, Brooklands Terrace, Swansea.

JUNE 2. BUILDINGS FOR SMALL HOLDINGS, NORWICH.—In connection with their forthcoming show at Norwich, the Royal Agricultural Society offer prizes of £25, £15, £10, £5, for plans of houses and buildings for small holdings. Address, T. McRow, 16, Bedford Square, W.C.

JUNE 7. CEMETERY BUILDINGS, MONKSEATON. Architects practising in Northumberland and Newcastle are invited to submit designs. Designs to Surveyor Council officer, Whitley Bay. Particulars from Augustus Whitehorn, 60, Savill Street, North Shields.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

JUNE 16. BUSINESS PREMISES CYMMER.—The Cymmer Co-operative Society, Ltd., are prepared to receive competition designs for the rebuilding of their business premises at Cymmer, Port Talbot, Glamorgan. £15 and £5 will be awarded to plans first and second in order of merit respectively. Block plan, sections, and conditions may be obtained on payment of 5s. (returnable on receipt of bona-fide plans), from the Secretary, Co-operative Society, Cymmer, Port Talbot. Plans must be received not later than June 16th.

JULY 7. SECONDARY SCHOOL FOR GIRLS, NORTHAMPTON.—The Northampton Boro' Education Committee invite architects practising in the borough or county of Northampton to submit, on the 7th of July next, plans for a secondary school for girls, to be erected in St. George's Avenue, Northampton. Particulars from Stewart Beattie, secretary, Education Offices, 4, St. Giles Street, Northampton.

JULY 31. PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND.—Prizes, £1,000, £500, £300, and £200. Particulars, Minister of Public Works, Wellington, New Zealand.

JULY 31. DESIGN FOR AN IDEAL COUNTRY HOUSE.—The "Daily Mail" offers a prize of £100 for a design for a country house to cost £900 to £1,100. Architectural assessors, Mr. E. C. T. Monson, F.R.I.B.A., M.S.A., and Mr. Edwin J. Sadgrove, F.R.I.B.A., M.S.A. Particulars from Carmelite House, E.C.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the Interna-

tional Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

THE NEW ENGLISH ART CLUB.

This institution is, from our point of view, distinctly on the rise in interest. No doubt the band of the faithful who delight in nothing so much as ugliness and eccentricity in painting will lament the gradual sobering down of these exhibitions into the paths of law and order, but there are still some things grotesque enough to please them, while the saner visitor will be glad to find an increasing number of works that he can take real pleasure in. The landscapes are interesting; experimental in effect, no doubt, but landscape is an interesting subject to experiment with. Mr. Sydney Lee has a good study of the effect of "Autumn Trees," in a very naively composed landscape cut in two by a horizontal line in the middle; Mr. Seabrooke's "Kentmere Valley"; Miss Fanner's "Sky Clearing after Rain"; Mr. Russell's "Fishing Boats, Collioure," and Mr. Mark Fisher's "Small Holding, Spring," are all good landscape studies. Mr. Stabb's "The Windy Flower Lane" is more, it is a masterly little idyll made out of a lane, a hedge, and a solitary figure; and Mr. Hayward's "The Wooded Cliffs" is remarkable in the treatment of the texture of the ground and the rock-grown vegetation; there is a reminder of Diaz in it. The same artist has a fine and powerful study of rocks "near Lyme Regis," and Mr. Gere's little "Painswick Beacon" in the same room is worth a note.

Among the figure pictures Mr. Shackleton's "Island of Dreams" is in a very bad light, it looks as if it should be good if one could see. Mr. Orpen exhibits a half humorous picture "Myself and Cupid," his own portrait figure faced by a little cupid statue. Why does he, who can do such admirable things, condescend to such uncouth subjects as "Sheep and Goats" in the water-colour room? It is a pity. Mr. Von Glehn's "The Garden," a design of nude figures in an Italian garden backed by a huge mass of clipped hedge, is interesting and would make a good mural painting, but would not do for tapestry (one of the uses suggested for it); nude figures cannot be satisfactorily executed in tapestry, either as to colour or modelling. Mr. Wilson Steer's "The End of the Chapter" is a most suggestive and decorative piece of genre painting on a large scale. Mr. Russell's "Tying Her Shoe" a picture of the same class which is not decorative; a curious illustration of a tendency of the school to choose attitudes for figures which are entirely un-
rainly. If we wanted to get the best impression of a lady, we should not wish to come upon her as she was stooping and her figure bunched up to tie her shoe: why paint her in so awkward an attitude?

The two small rooms contain a good many clever small water-colour and pencil sketches, mingled with a certain amount of absurdity.

OBITUARY.

Mr. James Long.

Mr. James Long, who has died at his residence at Southend, after a long and painful illness, was in his 71st year, and formerly carried on business as a builder in Dalling Road, and built somewhat extensively in Hammersmith and Chiswick. Between six and seven years ago he retired, and went to reside at Southend.

Mr. John Douglas.

Mr. John Douglas, who died at Chester on May 23rd in his 82nd year, went when a young man as assistant to Sharpe and Paley, at Lancaster, but had practised in Chester for about half a century, first by himself and afterwards in partnership with Mr. Fordham, and then with Mr. C. H. Minshall. His partnership with the latter terminated about eighteen months ago. Mr. Douglas built numerous churches, including Halkyn, Barmouth, Rossett, Old Colwyn, Pulford, Bryn-y-Maen, Shotton, Colwyn Bay, to which he was adding a fine tower at the time of his death, and a great number of houses, including Abbeystead, for the late Earl of Sefton; Oakmere Hall, Cheshire; Wvgfair, St. Asaph, etc.; and a large number of farms, cottages, and houses for the late Duke of Westminster. He also designed the St. Deniol's library and hostel at Hawarden, and whole sides of streets in Chester. He had a small estate at Sandiway in Cheshire, left him by his father, on which he spent large sums, giving the land for the church and paying for the chancel. He also owned property near Chester, where he built himself a very fine house.

CHEAP CHURCHES BANNED.

At the annual general court of the Incorporated Church Building Society, held at the Church House, Dean's Yard, Westminster Abbey, Mr. G. Spooner, F.R.I.B.A., in an address on church building, gave an interesting and instructive address on the work of the Committee. He explained at the outset that the reports which the Committee had, as a rule, to make upon the plans of new churches submitted were nearly always criticisms of detail. Such criticism was always made in a kindly spirit, "but," Mr. Spooner added, "I fear this is not always realised." It was very rarely, however, that the Committee was obliged to say that it could not report on a design, which generally meant that it was so bad that the Society could not contribute towards it.

While no one wanted to put any difficulty in the way of building a church, it was, he thought, questionable whether the Committee were not too lenient. "A large number of very poor designs receive the approval and support of the Society month by month—designs which are devoid of dignity, poor and mean in proportion and spacing, feeble, thoughtless, and feelingless in detail and uninteresting in the use of material, and yet comply with the rules of the Society. This is, I fear, strong condemnation, but it is not too strong of a certain number of designs which receive the Society's approval." The matter, Mr. Spooner went on, had been referred to several times before, and he proceeded to quote the opinions expressed by other members of the Architects' Committee in previous years.

Could anything be done to raise the standard? This was a matter which



COLUMN OF PEACE, BERLIN.

needed consideration and discussion, but he appealed to the clergy responsible for new churches to be more careful that the architect selected should be a man who could build a church with dignity and interest. The Church Building Society had set a very reasonable and good standard of building. Its rules had been made by men with great experience of Church finance and Church building. The rules of the Society did not allow of the cheapest ways of building, and he felt that if the Bishop would require that standard of stability, arrangement, and space as a condition of episcopal sanction to plans, they would very greatly benefit the clergy and churchwardens of the dioceses under their charge, and save waste of money. He condemned the idea of "cheap" churches, knowing that he did so without the risk of being misunderstood. The object of the Church Building Society was to help and encourage people to build a new church. "I am sure that one of the greatest helps the Society gives in contributing to a new church is in saving

the promoters from penny-wise and pound-foolish building."

COLUMN OF PEACE, BERLIN.

At a moment when public monuments are being much discussed, it is interesting to show, as a fairly typical German example, the Friedens-Säule, or Column of Peace, sometimes called the Column of Victory. It occupies the centre of the Belle Alliance Platz, Berlin, which is laid out as a garden. The column, springing from a tall pediment, is 60 ft. high, and is of granite with a marble capital. The crowning figure of Victory is by Rauch, and the four reliefs in marble, representing the four principal powers that took part in the battle of Waterloo (England, Prussia, the Netherlands and Hanover), were designed by Fischer, and executed by Franz and Walger. The Victory holds a twig of palm in her left hand, and with her right presents the victors' wreath to the city.

CHARGE FOR REINFORCED CONCRETE LINTELS.

We have received the following letter relative to a former communication upon this subject from the same correspondent:—

SIR,—On May 1st I wrote to you asking for information regarding the cost of constructing reinforced concrete lintels [p. 535, in the Journal of May 15th]. I stated that a firm who had reconstructed these lintels charged £21 for doing so, whilst the builders' original price was £8 8s., and that in view of this the new charge appeared excessive. Since writing that letter, I have discovered the cause of the discrepancy between the two amounts, and, in justice to the contractor who reconstructed the lintels, I beg to say that his price was not excessive as I thought. We have now agreed to pay the contractor the full amount of his invoice less £2 2s. 1d. (or about 10 per cent.), which he had added to his total cost for profit.

W. H. C.

NEW CANCER HOSPITAL.

The new Cancer Hospital in the Fulham Road, which was opened on May 23rd by the Duke of Connaught, provides for study in every branch of medical science bearing on the subject of cancer. The main entrance on the ground floor leads to a spacious hall, around which are disposed the various offices of administration, the director's room (which is his laboratory), the office and attendant's room, and a large reference and reading room. In the basement there is a machine-room, installed with machinery and electrical plant, adjoining it a large cold store and refrigerator, and leading off the machine-room is a centrifuge-room. On this floor are also placed the laboratory for experimental electro-radiophysics, and in connection with it a large dark room and photographic department. A special laboratory has been set aside on this floor for preparatory chemistry, which is equipped with mills, presses, combustion furnace, and an apparatus for the preparation of distilled water.

The upper part of the building is mainly devoted to the research laboratories, which are ten in number; half are set aside for the important branches of chemistry and physics. The same arrangement has been maintained as in the lower part; the laboratories, which for the most part intercommunicate, also open into the central hall. The institute is lighted throughout with electricity. It is also thoroughly equipped with gas and hot and cold water, and is heated by radiators. It is being furnished with the most recent scientific apparatus, and is adequate for the most advanced research.

The architect is Mr. Alexander Graham, V.P.R.I.B.A.

OUR PLATE.

The Welsh Church in Willesden Lane, in North-West London, which forms the subject of our Centre Plate, is designed in a style that is pleasantly reminiscent of similar buildings in Wales, characteristic Cymric feeling being manifest in both the general design and the decorative details. The interior arrangements are shown in the plan, from which it will be seen that behind the church there are two class-rooms and a tea-room. Mr. John Murray, F.R.I.B.A., is the architect.

CORRESPONDENCE.

The A.A. Play.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The A.A. Play is being held this year for the first time in the Institute Galleries during the first four nights of the present week (May 29 to 31, and June 1). May I trespass on your correspondence column to ask all members of the architectural profession to support the A.A. on this occasion? Tickets can be obtained from 18, Tufton Street, S.W.

PERCY W. LOVELL,
Hon. Sec., A.A. Play.

Gidea Park Town Planning Competition.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Without commenting upon or in any way questioning the assessors' award in the above competition, with which point this letter is not concerned, I should be glad if you would allow me space in your columns to criticise the manner in which this competition has been conducted.

After competitors had been at work on the scheme for about six weeks, they were calmly informed of an alteration to the boundaries of the estate which entirely altered the shape and conditions of the area to be planned, and this course was persisted in despite the protests of competitors.

In my own case, the plan was too far advanced to justify its abandonment at this stage, and it became necessary to adjust it to the new boundary. Its main lines had, however, to a great extent been dictated by the limitations of the original boundaries, and this patchwork arrangement was far from satisfactory, and I therefore afterwards got out a hurried scheme to suit the new boundaries of the site.

Then, after competitors had spent some time in preparing fresh plans or adapting them to the new site, came the intimation that plans for the original boundary would be eligible for the premiums offered. The best part of two months had by this time been taken up in this game of shilly-shally and indecision, and it is difficult to estimate the amount of useless expense and trouble competitors were put to, for which no remuneration whatever is obtained.

In the case of my own plan, I had gone to great trouble and expense, and had my plan well on towards completion before the change in boundary was made, and the scheme was totally upset and the *raison d'être* for its main lines destroyed by the alterations to the site; and I have no doubt that other competitors were similarly affected.

The report of the judges states that their award was based to some extent upon the successful embodiment in the design of an existing avenue of trees running eastward from Gidea Hall. Now, in the area to be planned, before the alteration to the boundaries, only a short length of this avenue was included, and moreover (unless continued across the golf course), it leads from nowhere in particular, and takes to nowhere, and was on this account quite unsuited by its position as a central avenue or constructional backbone for the lay-out. I mention this to show just one point in the bearing of this alteration to the site upon schemes prepared for the original site.

Before closing, may I be allowed to say a word upon one point which has struck me in the result of this competition, and that is, that it seems to have completely reversed the dictum in favour of really fine and architectural planning which was so marked a feature in the recent competition at Ruislip, and to have gone back to the more or less haphazard "estate development" type of planning. In view of this fact, I would like to ask those who favour this informal school of planning whether accidental and purely rural features should be allowed to dictate to too great an extent the lines of a new town or to stand in the way of a straightforward and really architectural treatment. Moreover, is it sufficiently realised that in the embodiment of existing trees and hedges in the scheme of roads, such trees and hedges will in every case be upon one side of the roads only? The timber on an estate should certainly be preserved, but there are other places more suitable than the roads themselves for very tall hedge-row elms.

One point more. The conditions of the competition clearly stated that the frontage lines should be shown on plan. The point appears to have been overlooked by the assessors in making their award.

I enclose my card, and sign myself

A COMPETITOR.

London's King Edward Memorial.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—My attention has been drawn to the article in your issue of May 17th, re the above, in which you quote from a recent letter of mine, containing a suggestion that the Memorial should be placed on the broad space opposite the National Gallery, which could be adequately enlarged by building out the central part thereof into Trafalgar Square, thus securing a platform of great prominence for the Memorial in the midst of the people, but entirely free from traffic obstructions. In making a further proposal, that the Square itself, in whole or in part, might be dealt with as an architectural garden, to which you anticipate "violent objection" on the part of "Reformers," I was careful to point out that this suggestion was not in any way an essential adjunct to the proposed site. I trust therefore that the latter may be considered on its merits.

It has the advantage of providing sufficient space for the reception of the base or plinth of the Memorial, according to the requirements of the case. Also there is an ample area all round, from which the Memorial can be observed, either closely or at a distance, and from varying levels, viz., that of the square below, that of the platform level, and, by ascending the steps of the National Gallery, that of the top of the pedestal. If a Memorial be placed as a sort of glorified island refuge in a street, or at the junction of one or more streets, it cannot be seen in comfort either near at hand or further away, owing to the constant flow of traffic, which moreover detracts from its dignity and repose, and soils its base with mud. The site suggested combines, I venture to think, all the advantages of a park site as regards space, together with those appertaining to a thoroughfare site, as regards bringing the Memorial in daily contact with vast numbers of people, without the disadvantages of being side-tracked in a more or less sparsely populated park, or being vulgarised and ren-

dered inaccessible, and its proper view impeded by close contact with traffic in a busy thoroughfare. I assume that however the pedestal may be treated, it will be surmounted by an equestrian statue of the late King, the best that can be procured. Can any other site present so many advantages and so few drawbacks?

BASIL HOLMES,

Secretary, Metropolitan Public Gardens Association, 83, Lancaster Gate, W.

THE ALL-INDIAN VICTORIA
MEMORIAL.

The most magnificent and costly of the many memorials to Queen Victoria is that of which, during his Indian tour as Prince of Wales, the King laid the foundation-stone. It is on the Calcutta *maidan*, and is now, after many delays, steadily advancing towards completion. The scheme was conceived by Lord Curzon and architecturally evolved by Sir William Emerson.

Provision has been made (says a correspondent of the "Times") for the elimination of a few architectural details to meet financial exigencies, should the contract figure of £364,662 be much increased by "extras." But though such "extras" are a common feature of Indian building work, they have been provided against in the present instance by the minute care with which plans and specifications were drawn under the architect's direction. No detail has been overlooked or left indefinite in the 30 sheets of plans, the set of 130 drawings, the 240 pages of specifications, and the 500 pages of price-bills and quantities. In fact, every joint and every size of stone and marble to be used have been shown. One small change decided upon, however, when Sir William Emerson was in Calcutta last, was to make the pediment over the principal entrance square. This magnificent building will be something more than an architectural monument. It will fill the place of a National Gallery for all India, containing paintings, statues, trophies, arms, documents, models, and objects of every description illustrating what has been remarkable or pre-eminent in Indian history, from the time of Baber, the founder of Mogul rule in Hindustan. The nucleus of the collection has long since been formed, and includes pictures and personal mementoes of Queen Victoria given both by the present King and by King Edward.

The style chosen by Sir William Emerson is the Italian Renaissance, with a suggestion of Orientalism in the arrangement of the domes and minor details. The building will be of white marble from the Makrana quarries in Rajputana, no less than 175,000ft. of this material being used. The two main approaches will be from the north and south. That from the north will lead up to a flight of marble steps, 80ft. wide and 10ft. in height, to a terrace, 50ft. wide, running all round the building. At the foot of the steps will be the bronze statue of Queen Victoria by Sir E. F. Frampton, which now stands on the Calcutta *maidan* to the south of Government House, while at the top of the stairs will be placed a lion and a tiger in bronze. A feature of the exterior will be four corner towers surmounted with handsome domes. At the south main entrance will be a portico for carriages, approached by sloping roads from the Queen's Gardens. These are to be laid out on a befitting

scale, and the two large tanks on the east and west are to be transformed into pretty lakes.

From the terrace a porch, 30ft. square, will lead to the Queen's Vestibule — a marble hall 80ft. by 30ft., with a beautifully domed ceiling. To the right and left of this room will be the picture gallery and the sculpture gallery respectively, each 78ft. by 30ft. The principal feature of the interior will be the Queen's Hall, in the centre of the pile, circular in form, and approached on both sides by spacious marble-floored quadrangles. Ionic columns 28ft. high will support the dome, which is to be 69ft. in diameter, and will reach a height of 151ft. On the north side two circular stairs will lead up to the lantern of the dome, which will be surmounted by a 20ft. figure of Victory. On the east and west of the hall, which will be richly decorated in the purest white marble, will be two quadrangles, each 100ft. by 60ft. Then will come the Princes Hall, leading to the Durbar Hall on the left, while on the opposite side there will be a small museum for arms, trophies, and engravings.

LEGAL CASES.

Builders' Action against a Bank.

At the Manchester Assizes, on May 22nd, the action of Messrs. William Brown and Sons, builders and contractors, Salford, against the Union Bank of Manchester, was concluded. Plaintiffs sought to obtain damages for alleged libel, which they contended that the Bank had committed in dishonouring a bill of exchange and certain cheques, thereby implying that plaintiffs had made no provision to meet them. This was the seventh day of the action, and eventually the jury were unable to agree, and were discharged.

The Judge put the following questions to the jury: First, did the bank by its officers, Mr. Forrester and Mr. Lambert, on July 29, 30, and 31, agree to meet the acceptance for £453 18s., and to pay the plaintiffs' cheques, including those which were dishonoured? Secondly, was Mr. Forrester actuated by malice in refraining from sending notice to the London bankers to pay the bill and in giving orders that the cheques should be marked "R.D."? Thirdly, were the words "N.O." on the bill defamatory? Fourthly, what damages, if any? In summing up, his lordship said that nobody who heard the case could fail to have a feeling of sympathy for Mr. Brown, senior, who for years had carried on a very fine business; but the jury must decide the question on the evidence alone. The relations of banker and customer in law were quite clear. Of course, if a bank made advances to a customer the relations between banker and customer were the ordinary relations between debtor and creditor. The relations in particular cases depended entirely upon what the bargain between the parties was. An old customer had no right to break a contract or bargain, and if a bank was determined to stand upon its rights it was entitled to do so. The jury had to decide whether the letters "N.O." placed on the bill formed a true statement. At the time they were written Browns had no assets. What they said was that although they had no assets and were largely overdrawn the bank had agreed that they should be treated as though they had assets—that was to say, that they had agreed to meet these cheques. If the jury thought the

plaintiffs had proved that the bank had agreed to meet them, the statement on the documents were not true. If they thought no such agreement was made, then the words were true. It would be seen therefore that the case really turned upon the evidence of the plaintiffs and the defendants respectively, as to what happened on the last three days in July. They had on the one side the evidence of Mr. Brown, sen., Mr. F. Brown, and possibly that of the clerk and of Mr. Harold Brown. On the other side they had that of Mr. Forrester and Mr. Lambert. Those witnesses were in direct conflict. The way in which Mr. Brown was doing business with the bank was a matter entirely for the jury, and they would decide whether he was presuming upon his position as an old customer or whether he really did not understand what the bank were insisting upon. It was contended with regard to the occurrences of July, 1909, that Mr. Brown was warned that he must not expect any indulgence. On the other hand, if Mr. Forrester made the bargain alleged by the plaintiffs, he had no right to say that the cheques must be "referred to drawer." If he did not make that bargain he was acting on the instructions of his Board in not allowing the plaintiffs the overdraft they were seeking to meet the cheques. On that part of the case the judge pointed out that the jury had nothing to do with any question of malice or indulgence or hard treatment. They had to consider the pure question of bargain. Was the bargain made? If it was made the bank were bound to keep it; if it was not made they were under no obligation to act as though they had made it. He asked the jury to answer that question first, because the real solution of the case largely depended upon it. That question was, "Did the bank by its officers, Forrester and Lambert, on July 29, 30, and 31, agree to meet the bill for £453. and pay Messrs. Brown's cheques, including cheques for £100 and £103?" If they answered that question in favour of the Bank, that there was no agreement, there was an end of the action and there was no need to go into the rest of it. If, however, they answered the question in favour of the plaintiff, that there was this arrangement, he had then to discuss with them the question of whether there was malice or not, because if there was this arrangement still the Bank would not be liable for making these statements, made as they were on a privileged occasion, unless there was malice. He did not wish to put the questions to the jury separately in such a way as to frighten them from doing their duty. If they thought there was an agreement they should say so, although it might mean some more discussion. If, on the other hand, they thought there was no agreement, and that the plaintiff had failed to make an agreement, they ought to say so, although they might feel some difficulty with regard to Mr. Brown. It was a question of bargain. If the Bank broke the bargain they must take the consequences. On the other hand, if they made no bargain it was not right they should suffer because Mr. Brown said they did.

The jury, after deliberating for about an hour and a half, announced that there seemed no chance of agreeing upon a verdict.—The judge expressed his regret at the result, and discharged the jury.

No doubt it would have been possible to take the verdict of the majority of the jury; but this is a course that seldom commends itself, and in the present case the suggestion was rejected.

A CANADIAN PROVINCIAL PARLIAMENT HOUSE.

The formal opening of the Parliament House of Saskatchewan, on the banks of Wascana Creek, Regina, is to take place in a few months' time. The plan is cruciform, the style classic, but, says a correspondent of the "Canadian Mail," breathing through the whole treatment is that French influence which is frequently so noticeable in the best buildings on the American continent. In fact, the whole tendency may be described as towards the French, on classical lines. The result is a structure which has a beauty, grace, and dignity, combined with an impression of solidity and permanence which appeals at once to the eye and the understanding.

The front is 542 ft. long. The magnificent entrance, approached by a grand flight of steps, is in the centre. It leads into the rotunda or lobby on the second floor. This rotunda, which is 60 ft. high, will be, the writer firmly believes, the most beautiful and appealing thing of its kind on the American continent. When it is said that recently it was decided to alter the original plan, and spend an additional eighty thousand dollars on this portion alone, it will be seen that there is nothing small about the way it is being done. The great columns of concrete have been dispensed with, and solid marble substituted. The whole thing is being panelled with marble: the balustrades are of marble, the floor of marble mosaic, and this lofty interior, with its marble arches, reminds one of the finest cathedral effects. The marble is Canadian—the Mississiquoi marble from the famous quarries in Eastern Quebec. The shades of the marble are green, very soft, and at the same time distinctive, and very pleasing to the eye.

The Legislative Hall is lofty and dignified, ornamented with classic taste, without meagreness and without profusion. The whole building is of Tyndal stone, obtained from the neighbouring Province of Manitoba. This is a handsome and durable limestone. The markings of this stone are very beautiful. The ferns, shells, and fossil deposits generally which go towards the make-up of the stone give a rich brown tinge to the grey material. The fern marking is particularly noticeable. The whole building is composed of western stone and eastern marble. A fine dome rises from the centre and will be a landmark for a hundred miles.

The buildings stand on the banks of the Wascana Lake. The lake is produced by a massive dam two or three hundred yards long, which also forms a fine bridge. No scene is perfect without water, and the buildings are fortunate in this respect. They stand in their own grounds of 160 acres, and a fine landscape plan has been prepared. There will be a magnificent carriage entrance of massive stone to the ground, avenues to the lake, and a summer house, which looks like a classic temple. The whole one hundred and sixty acres will be laid out artistically, so that the Parliament buildings will not only be splendid in themselves, but will have splendid surroundings.

The constructors are Messrs. Peter Lyall and Sons, Montreal, who have as their superintendent-in-charge Mr. J. Lecky, a young Englishman. Mr. J. H. Punton, the supervising architect representing the Saskatchewan Government, is also an Englishman. Messrs. Maxwell, of Montreal, the architects who have designed the buildings, have been ably represented on the ground by Mr. J. E. Fortin, a French Canadian.

MODERN BUILDING FIRMS.—I.

HIGGS AND HILL, LTD.

Modern methods of building construction have necessitated the reorganisation of the older arrangements, the extensive adoption of new plant, materials, and systems, and a general "speeding up"—as the Americans say. Unfortunately all this has not been towards the advancement of good work. Things now are demanded immediately, and builders, like other people, have to carry out jobs in the shortest possible time. Competition, moreover, has become far keener, and though there is more work, an ever-increasing number of firms are clamouring to do it—often with very little profit, and sometimes actually at a loss. The age, too, is the age of the specialist, our requirements becoming so complex that the study of the innumerable sections is life-work for as many separate minds. And this also has its attendant evils as well as advantages.

Modern methods of building construction tend strongly towards specialisation and sub-contracting. When new methods and materials are introduced, it is quite natural to entrust their application to the introducers, who may be assumed to know most about them, and therefore to employ them to the greatest advantage. From this cause the specialist or sub-contractor has of recent years loomed large in the building trade, which formerly was one of the most homogeneous of the great industries. Sub-contracting, however, gives rise to many inconveniences—a certain amount of overlapping, or its opposite, a certain degree of friction or actual

collision between the several parties, irritating delays and disagreements, and a weakening of efficiency in the general control.

When the new process or the new material becomes familiar, the general contractor is glad to assume control of it, and the specialist is not sorry to be relieved of responsibilities of management which really interfere with his more legi-

timate business of producing and purveying. Hence, the tendency to specialisation is constantly accompanied by a counter-movement towards absorptive concentration and central control, because it is realised that this method is altogether the most convenient and economical.

We were afforded a notable illustration of this when visiting recently the works of the old-established firm of

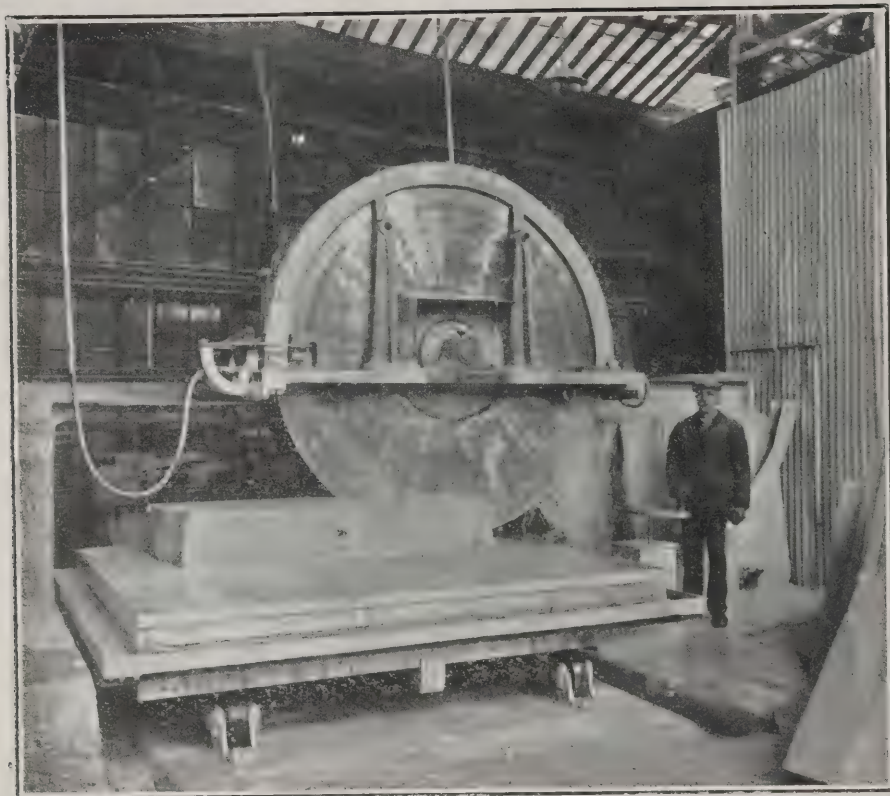


The Stone Yard.



The Masonry Shop.

THE WORKS OF MESSRS. HIGGS AND HILL, SOUTH LAMBETH.



THE DIAMOND SAW FOR CUTTING STONE.

Messrs. Higgs and Hill, Ltd., Crown Works, South Lambeth Road, where it was a surprise to find, between the rear of Vauxhall Park and Kennington Oval, an area of four acres covered with builders' workshops. After visiting all parts of the works one was impressed by the completeness of the arrangements, the efficiency with which everything was done, and, above all, it was evident that here at least was a completely self-contained business, embracing every branch of the building trade, and able to produce by direct employment of labour everything necessary to the erection of modern buildings.

We first visited the setting-out shop, where the full sizes of several large stonework jobs were being set out on the ample boards. In particular we noticed details by Mr. Charles G. F. Rees, architect, for extensive additions in Portland stone which Messrs. Higgs and Hill are making to Tyringham House, near Olney—an old house originally designed by Soane; new premises for Messrs. Gerrard at No. 24, Albemarle Street and No. 17, Grafton Street, of which Messrs. Ernest George and Yeates are the architects; new vestibule, ballroom, dining-room, and winter garden at "Higham," Canterbury, for the Countess Zborowski (Mr. Joseph Sawyer, architect), where 16,000ft. of stonework has been needed for the additions, and in the great pilasters of which there is no less than a mile of fluting; the new Harrow Station (Mr. Gerald C. Horsley, architect); and the London and County Bank, Hammersmith.

Passing from this setting-out shop, we went into the masonry department, some idea of which can be obtained from the accompanying photographs. This department is a most comprehensive one, and is equipped with modern plant throughout. At the time of our visit there were about 100 men at work in the stone yard. Among the plant were to be noticed modern cutting, moulding, and polishing machines, convertible to different powers and

speeds; while overhead ran electric and other cranes for the rapid conveyance of material. The largest of these cranes will lift 14 tons. But the most interesting machine in the yard is the diamond saw for cutting stone. A photograph of it is reproduced on this page. This is a steel disc 8ft. in diameter, and having small diamonds set around the periphery in alternating positions. There are, in all, 172 diamonds ($\frac{1}{2}$ carat), each mounted in a steel block, easily removable. The driving power is a 25 h.p. motor, and the speed is 420 revolutions. The saw cuts Portland stone at the rate of $7\frac{1}{2}$ ins. to 10 ins. per minute, and leaves a perfectly even surface.

Near this saw are six saw frames for stone, of the usual type, making 110 strokes per minute, and cutting through Portland stone at the rate of 2ft. per hour; some of the frames being adapted for cutting extra long blocks.

Messrs. Higgs and Hill have special facilities for obtaining the best and biggest blocks of Portland stone, some fine examples of which are to be seen in their stoneyard.

The firm make a speciality of producing or reproducing architectural full-size detail of any period, either from drawings or from old work. Advice is also given respecting decayed masonry and its treatment.

After visiting the stonework we went into the plaster-shop, where the work of casting in gelatine moulds, etc., was in progress; in particular we noticed the firm's "stuc"—which is a very close imitation of stone in hard plaster, and is very extensively employed for inside wall surfaces.

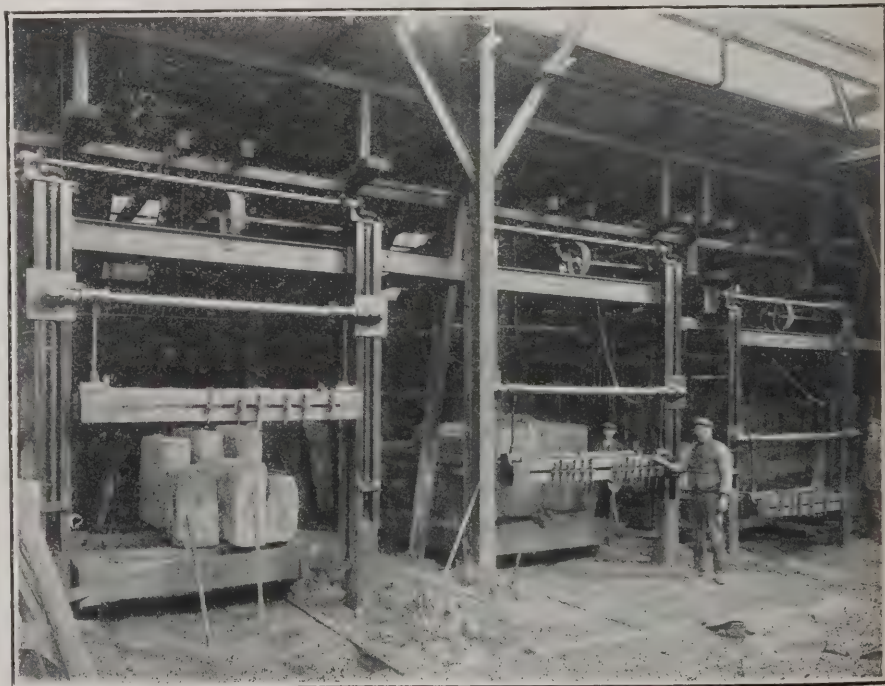
Continuing our round of the works, we next saw the shoring department. The stocks of poles, shores, tackle, etc., for this work is particularly large, Messrs. Higgs and Hill being under contract with the London County Council to undertake shoring at four hours' notice, day or night.

Another department of the works, and a recent one, is that for the manufacture of hollow concrete (coke-breeze) floor tubes and wall or partition slabs. The method of manufacturing the hollow concrete floor tubes is ingenious. They are cast in sand moulds.

The deal and hardwood sheds cover a large area, and the heavy stock which lies here maturing under cover is no doubt the foundation of the good reputation the firm holds for joinery.

In the joiners' mill are planing, moulding, sawing, and other wood-working machines of the latest type, though not calling for any special description.

Then there are the carpenters' and joiners' shops containing over 100 benches. We noticed among other things a large number of Cuba mahogany show-cases. Messrs Higgs and Hill claim that "joiners'-made fittings" prepared from



STONE-SAWING FRAMES.



THE SMITHS' SHOP.



ONE OF THE JOINERY SHOPS.

architects' designs are not only architecturally correct, but superior in workmanship and construction to cabinet-made fittings.

Completing our round we inspected in turn the wood-polishing shop, tackle and gear department, the smiths' shop (where we found, beyond the ordinary forge work, constructional steelwork in hand), the electrical shops, the engine houses and steam drying rooms, stables, motor lorry garage, and spacious offices.

The visit was a most interesting one, and we were greatly impressed with the excellence of the work done, the up-to-date character of the plant, and the general feeling of thoroughness which pervades the works.

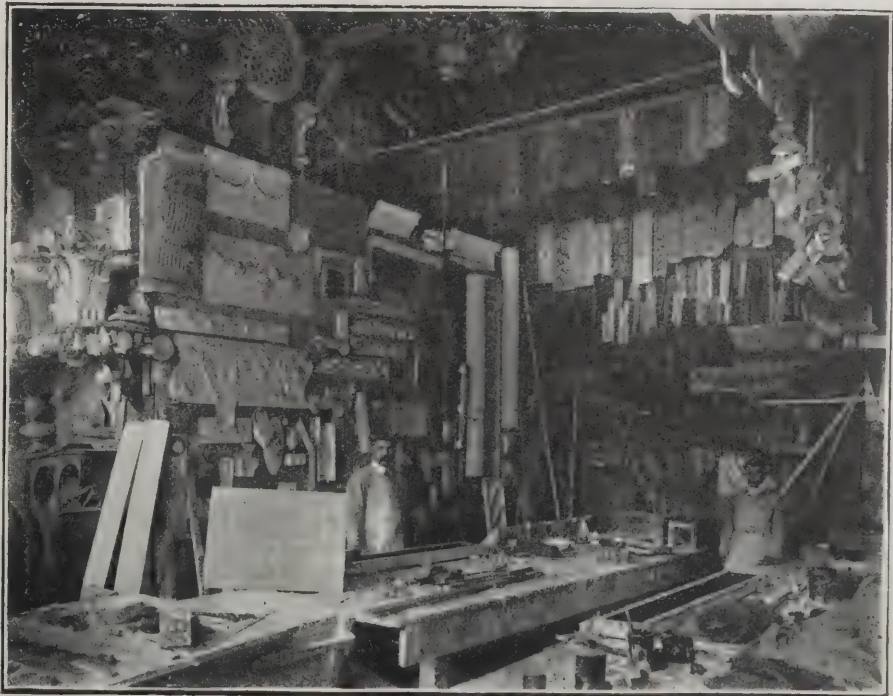
At a time when such radical changes are being made in the building trade, in an age of specialisation, when, as has been said, the builder is often a contractor of sub-contractors, it is refreshing to see such a self-contained establishment as that of Messrs. Higgs and Hill; a firm which maintains the reputation for sound work in a manner worthy of its old establishment, and at the same time keeping abreast of the times in all its several departments.

Since the amalgamation of the old-established firms of William Higgs and Hill

and Sons in 1874, the firm of Higgs and Hill have carried out a vast number of undertakings. To mention even a tithe of these would occupy too much space, but the following include some of the well-known buildings:—The Tate Gallery (Mr. Sidney Smith, architect), The Royal Naval College, Dartmouth (Sir Aston Webb, R.A., architect), The Employers' Liability Offices, Victoria Embankment (Sir Wm. Emerson, architect), Victoria Station (Mr. W. J. Ancell, architect), United Kingdom Provident Institution, Strand (Mr. Henry T. Hare, architect), Clarence Wing of St. Mary's Hospital (Sir Wm. Emerson, architect).

DURHAM NEW SEWERAGE.

The original scheme of sewerage for the city of Durham, designed and carried out by Mr. Charles Hawksley in 1853, delivered the sewerage into the river Wear, but in view of the increase of population and the necessity for preventing the fouling of rivers, the Corporation undertook a new scheme which has recently been completed from the designs of Mr. H. W. Taylor, of Messrs. Taylor, Wallin, and Taylor, of Newcastle-upon-Tyne. The main sewers now intercept and divert the sewage from the river, and the necessity of securing satisfactory gradients involved an inverted siphon under the river, near the Elvet Bridge, and a tunnel 70 ft. deep under Claypath, Durham. These sewage works, which represent the largest bacterial installation yet carried out in any part of Northumberland and Durham, have involved an expenditure of £43,000. The contractor for the first part of the outfall sewer was the late Mr. Tempest, of Manchester; for the sewer in the tunnel, Messrs Hodson and Son, of Carlisle; for the erection of the pumping station, Mr. F. Gibson, of Durham; for the main intercepting sewers and also for the sewage disposal works, Messrs. Firth and Co., of Derby; for the supply and fixing of the large engines and pumps, Messrs. Tangye and Co., Limited, of Birmingham; and for the underground engines and pumps, the National Gas Engine Company, Limited, of Ashton-under-Lyne.



PLASTER SHOP.

ENQUIRIES ANSWERED.

Architects' Assistants on the L.C.C.

W. G. M. (Dovercourt) writes: "Please state whether there are any openings in the L.C.C. Architects' Dept., and how information may be obtained with respect to qualifying for these posts."

—The following extract from an advertisement which occasionally appears in the L.C.C. Staff Gazette would appear to afford the necessary information: "The unestablished staff comprises draughtsmen and technical assistants engaged in a temporary capacity. The rates of pay range from £1 1s. (for youths) to £4 14s. 6d. a week. The commencing rate of pay for clerks of works is £3 3s. a week. Forms of application may be obtained from the Superintending Architect, the County Hall, Spring Gardens, S.W., but there is already a large number of applicants on the list, and at the present time the number of the unestablished staff is being reduced." The L.C.C. Staff Gazette may be obtained from the Council's Agents, Messrs. P. S. King and Sons, 2 and 4, Great Smith Street, S.W.

Registration and Non-Diploma Architects.

A REGULAR READER writes: "Having read in your issue for May 3rd of the probable amalgamation of the Society of Architects with the Royal Institute, I shall be glad of your opinion in the following case:—I am an architect and surveyor, 25 years of age, in partnership with my father, who established a practice in the year 1886. Neither of us is connected with the Royal Institute or with any of the existing associations or societies. In the event of registration coming about what will be my position? I maintain that I am an honourable member of the architectural profession, serving my apprenticeship in the office of my father, whom I have helped in the designs of many important buildings. If I am turned aside from architecture I shall be practically destitute."

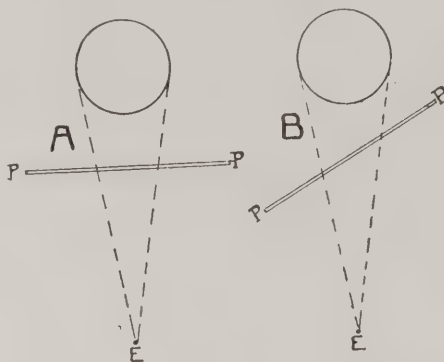
—The Registration Bill which has been drafted by the Society of Architects provides for those in the position of our correspondent, and he and others similarly situated, who have raised the question under consideration, are somewhat premature in assuming that whatever bill is eventually presented to Parliament will not protect all vested interests.

The Sphere in Perspective.

R.W.C. writes: "Is it incorrect theoretically to represent a sphere in perspective by a circle? My own opinion is that it is correct to do so, but I have heard it argued that, inasmuch as the cube which would contain the sphere is itself seen in perspective, the sphere must suffer corresponding modification, and would not, therefore, be correctly represented by a circle. I think this argument is erroneous as the sphere is not seen in perspective by the circles drawn through the six points of contact between the sphere and the cube, but by other circles not passing through such points of contact; and it is by virtue of these circles that a sphere is correctly represented in perspective by a circular line. I shall feel obliged by a reply saying which view is correct."

—It is perfectly correct theoretically to draw a sphere in perspective; it is a very simple question of conic sections, as the annexed diagram will make clear. The complex of visual rays from any sphere to the eye forms a cone of which the eye is

the apex. In diagram A, where the eye (E) is directly opposite the sphere to be represented—when, in other words, the picture-plane p.p. is at right angles with the axis of the cone of rays, the outline of the sphere projected on the picture-plane will be a circle rather smaller than the sphere. But if the spectator changes his position, or if (which is the same thing) the picture-plane is turned at an oblique



angle to the cone of rays, as in diagram B, their projection on the picture-plane will form an ellipse, just as an ellipse is produced by the oblique cutting of a material cone. It would be right always to draw a sphere on this principle, if the spectator's eye could be fixed to one spot—if, for instance, he only saw the picture through a hole in a fixed screen. But as a spectator is free to choose his position, the rigid carrying out of the rule would often result in an appearance of distortion of the pictured sphere; and in most cases it is better, pictorially, to show it as bounded by a circle. There may be cases, however, as where there is a stone sphere on a gate-pier on one side of the foreground, in a large picture where the spectator would naturally stand opposite the centre of the canvas, when it may be desirable to modify the sphere in perspective, to make it look spherical from the spectator's probable standpoint. It is a question to be settled by regard to pictorial impression rather than by a fixed rule.

Proposed Roof Truss.

CONSTANT READER (Wigan) writes: "Would you consider the type of roof truss shown by accompanying sectional elevation [not reproduced] constructionally sound? If so, what would be the scantlings of the timbers?"

—The form of truss submitted is constructionally unsound and not suitable for the span. A distance apart of 18ft. is too great for the roof trusses; as a rule, 12ft. 6ins. should not be exceeded. Piers 30ft. high will not have sufficient section if made only 2ft. by 3ft. See "Building Construction" (Cassell, 7s. 6d. net), for various types of roof truss by the writer.

HENRY ADAMS.

Employment of Quantity Surveyors.

QUERY writes: "I recently read a statement affirming that it is cheaper when building to have quantities prepared by a quantity surveyor. Would you kindly explain how this can be proved? Quantities are no doubt advantageous to builder and architect, but how so financially to the employer?"

—The statement is hardly demonstrable of absolute proof. In small work of an ordinary or simple character up to about £500 value, the employment of a quantity surveyor will be found actually to increase the cost of the work. In larger or unusual

work the services of the quantity surveyor may or may not result in a direct saving to the building owner, but will assuredly be beneficial. Assume that quantities are not supplied, the architect's drawings and specification are sent instead to a number of builders in succession, each evolving his own reading of the designer's intention, until one, by a probable misreading, estimates the cost at less than the proper value of the work, and so secures the contract. The execution of work under these conditions usually results in a continual struggle for "extras" throughout the course of the job, on which it is often difficult to place an effective check owing to the lack of an accessible priced schedule for reference. It is also to be presumed that the builders who tender employ and pay quantity surveyors (more or less qualified) to prepare their estimates, adding the cost of the quantities to their tenders. Such quantities, though unauthoritative, are thus indirectly paid for by the client, but are not available for reference by him or his architect. Where a good quantity surveyor is employed direct, and quantities are supplied, the architect is able to see that exactly what he intends is embodied; he is certain that all estimates tender upon the same basis; and he can usually obtain prices from builders of higher standing. The priced schedule is available for reference in case of any variation, and all omissions and additions can be valued, without the possibility of dispute, at contract rate. In such circumstances it is obvious that better work may be looked for—money cost is not the sole measure of economy. G.

COLOURED RELIEF.

An interesting discussion followed the reading of Mr. R. Anning Bell's paper (published in our last issue) before the Royal Institute on the 22nd inst. Mr. Walter Crane, proposing a vote of thanks, said he was glad that Mr. Bell had touched upon the difficulty that two different artists would experience in working together at the present day. He (Mr. Crane) concluded that the trouble was largely due to the commercial and economic conditions under which we existed. It was possible, continued Mr. Crane, to model not only in clay and plaster but also in stucco or plaster of Paris. A fibrous plaster ground, too, could be used with bold and satisfactory effect. Prominent among the difficulties which craftsmen encountered were the firms that would undertake to carry out a scheme of decoration complete at a fixed contract. This, of course, was not possible to private artists, whose only hopes and opportunities now rested entirely with the architects. Concluding, Mr. Crane was afraid that the nation took very little interest in art apart from street decorations and public monuments.

Professor Gerald Moira said that while working with Mr. Lynn-Jenkins he had come to the conclusion that an important factor in the satisfactory treatment of coloured relief was flatness of modelling.

Mr. Lynn-Jenkins, having referred to his disappointment at the lack of support from architects, proceeded to develop an argument in favour of the use of coloured relief, which, he said, was a distinct art demanding a singleness of purpose. What were the objections to coloured relief? was its supposed lack of permanence a reason? If properly treated plaster would last for a very long time indeed, so this objection was negligible. The chief objection to coloured relief, he believed

existed in its degradation at the hands of the Philistines. This was greatly to be deplored, as it militated against its serious use by serious artists.

Mr. J. D. Crace enquired what support was coloured relief, when executed, to have? The success of the Trocadero Restaurant decoration was undoubtedly due to the fitting of rich dark wood, which gave support and, as it were, tied the decoration to the room. Unless this method was followed the building suffered, and the architectural lines were lost in the attraction of the coloured island. A great drawback in the use of "biscuit" was its weight; it was heavier than plaster. At Hardwicke, which was about 300 years old, the plaster was still quite sound, although the colouring, which was crude originally, had rubbed off. In Spain, said Mr. Crace, there was a great deal of 15th and 16th century coloured wood relief that deserved study. The success of coloured relief largely depended upon the modeller and colourist being identical, as in the case of Mr. Bell, who combined both functions.

Mr. Maurice B. Adams made reference to a practically demolished house in front of Hardwicke Hall, whereon certain exposed decoration in plaster or stucco was still standing although much of the brick and stone had perished. The objection to colour was illustrated, he thought, in a reredos by Alfred Gilbert in St. Alban's Abbey, which seemed quite incongruous to its setting, although perhaps a beautiful thing in itself.

Mr. H. H. Statham said that the lecture had taken his mind back to the time when small bas-reliefs began to appear at exhibitions in the name of Anning Bell. He showed colouring in the flat now; and whenever he (Mr. Statham) wanted to see good colouring he went to Anning Bell. No reference had been made to the remarkable instance of the frieze of the Parthenon. There was no reason to doubt that this was coloured, and it explained to some extent why it was put high up under the shadow of the portico. In the use of colour with relief sculpture it was important that the relief should be kept low; otherwise, if the relief were high, the colour imparted a too realistic effect. An unfortunate example of this was to be seen in Waltham Abbey—either designed by Burges or put there to his directions.

Professor Reginald Blomfield said that the painters had carried the war into the enemy's camp, and had laid the burden of responsibility on the architect. If the artists were to have a chance they would find it through the architects. But architects themselves were artists with an art of their own of definite limitations. The artists, he thought, did not make full allowance for the difficulties with which the architects had to contend. The question was, how far was it to go? Evidence showed that the Greeks used painted relief in distinct subordination to architecture. The best mediæval work, too, was quite flat. The combination of modelling with painting did raise a difficult question; and speaking as a purist it seemed to him similar to Wagner's attempt to remodel the opera, which ended in dismal failure.

Mr. Anning Bell, in reply, said the painters should act as a colleague and should work in subordination to the architectural scheme. Small pieces might be subtle and elaborate, but for large work only strong and simple treatment was appropriate. No doubt the Parthenon frieze was designed for colour and not merely for modelling.

ARCHITECTURE AT THE ROYAL ACADEMY.

Concluding Notice.

Street architecture seems to run at present a good deal in the direction of a formal very square-lined treatment—pilastered windows arranged in vertical series, panels between them or in the attic, the panels sometimes in relief with what may be called vertical swags depending from them. The manner is illustrated in Mr. W. Henry White's "89, Harley Street," and "12, Queen Anne Street," and Mr. Arthur Blomfield's "Insurance Offices, Old Serjeants' Inn." It is what may be called a sensible style, but does not evoke enthusiasm. Messrs. Colcutt and Hamp's "New Façade to Embankment, Savoy Hotel," is little more than a slight perspective sketch, in which a certain effect is produced by the series of projecting vertical strips of building containing small square windows, contrasting with the large windows of the main walls between. If the authors had added a plan we should have been able to understand the meaning of these projections and their windows; as it is, the sketch is a mere design in the air. None of the drawings already referred to shows any plan.

Messrs. Arthur and Henry Hill's "Head Office of the Munster and Leinster Bank, Cork," is a large and carefully drawn elevation; no plan—but a bank, it must be admitted, can hardly be expected to allow its plan and interior arrangements to be publicly illustrated, and the design is so essentially a "front" that it is of less consequence. The architects accept the traditional idea that a bank should be a classic structure with a columnar Order, in this case an Ionic Order extending over most of the front, stopped by solid pavilions at each end, and based on a rusticated ground storey, the line of which is broken by the massive architrave of the central doorway, which rises above it. The whole is monumental and dignified in appearance, but the bronze trophies over the end pavilions are rather too heavy, too confused in outline and arrangement; they look as if heaped on rather than carefully designed.

Mr. Eustace Frere's "Mission Church and School" goes to the other extreme, the reverse of monumental, that of over-acted simplicity, with not even a cornice to take off the nakedness of the bare edge of straight wall at the top. It is a repetition of an effect which he has made his own; a little white stone (?) work here and there, occasionally carved, on a general groundwork of rather dingy-looking brick. The effect is picturesque in a water-colour drawing, but not exactly architectural. The author has the merit of giving a small plan, from which we learn that there is an internal staircase on each side of the entrance door, but no hint of the fact appears in the treatment of the elevation. Mr. E. J. May exhibits a frame of pen sketches of interiors of "Webbington House, Somerset" (no plan); the drawing-room, with its canted ceiling, looks a pleasant room, with a roughly sketched decorative ceiling. In a view on what we take to be the back staircase the semi-circular decorated ceiling sorts rather oddly with the heavy plain constructional timbers crossing it at the springing line; it is just the kind of effect that would interest one in an old house, but looks rather odd in a new one. Messrs. Field and Simmons's "Two Houses, Westminster" (no plan), is a good square street house mainly in brick, diversified by columns carrying

a balcony between two projections at the angles. It has the character of a town house. Mr. Wilfred Hoyle gives a small sketch plan of his "House at Cobham," a pretty country house of the symmetrical type, with an arcade of three bays screening the entrance, between the projecting wings; the roofs are not quite well managed; those of the wings do not fit on to the centre roof neatly.

Mr. Winter Rose takes us into the region of mere picturesque sketching in his "House at Chatteris" and two entrances to another house, further on; charming as sketches, but more what one expects to see in the water-colour room than the architectural room. "The South Court, Ewelme Park," by Mr. Stanley Crosbie (no plan), is a house of the picturesque type, very pleasant as such, with its three small bay windows affecting to carry the over-sailing upper storey. Mr. Oswald Milne accompanies his "Drakestone" with a plan, from which we see that both drawing-room and dining-room have large windows facing south; not a desirable arrangement for sunny weather, however pleasant in winter. Mr. Curtis Green's "House at Hampstead" is what we should call a cottage, but he has wisely given plans of both floors, and the plan is well arranged. Then we come to a rather interesting experiment in remodelling a very plain old Georgian house, "Norman Court, Salisbury," by Mr. Sydney Tugwell; no plan again, but a small view is given of the bare-looking house as it was, so that we can see what has been done. The front has been made symmetrical by the addition of a new wing on the left side; the centre somewhat raised as an attic, and the house dignified architecturally by the application of an order of fluted pilasters, so that there results a formal country mansion of severe classic type; but why such very narrow proportions to the pilasters? All the defence for such things lies in tradition, and the traditional proportions should be maintained. Messrs. Brewill and Baily's "Alms-houses, Nottingham" (no plan) is a very pretty water-colour drawing of a brick and half-timber quadrangle, but whether it is very convenient for the aged poor, who we suppose inhabit an almshouse, to give them four flights of stone steps to surmount before they get to their quadrangle gate, may be questioned.

"The Hermitage, Bedwelty, Mon.," by Mr. J. N. R. Vining, is really interesting, for it shows complete plans, on a small scale, of a house of very original conception. It is an equal-armed cross plan, with a square court-yard in the centre, and small bays at the re-entering angles of the cross, which afford space for staircases and small subsidiary rooms. The main cross plan is roofed with a red-tile roof with level ridges, the bays in the angles stop short at the first floor level, and finish with balconies. It ought to be a pleasant and interesting house to live in, and it is to be praised as an exhibit which is based on a definitely set-out plan, and is not, like so many of these house designs, a mere water-colour sketch of an exterior. Mr. Lishman's "East Bergholt Rectory" has also an interesting plan of of a somewhat unusual type.

Mr. Hazell's "Proposed Nursing Home, Westminster," is a pleasingly designed exterior, with no plan to show us why the windows on one front are concentrated towards the centre, and the side portions of the wall left blank. From this a good deal of the character of the building is derived, but we want to know what basis for this arrangement there is in the plan. Mr. Willmott's "House and Grounds at

Berkhamsted" is really a bird's-eye view of the planning and arrangement of the garden, which is very good and very well shown in the drawing. "High School, Riverside, California," by Mr. Harold Merriman, is a long low classic building with an order, which looks very well in itself but does not suggest a school; looks more like a court-house or official building of some kind. On the same point as to character in a building, we do not see that Mr. Horsley's two buildings for Harrow and Pinner Stations have any specially railway-station character about them; but surely there ought to be something about a country station offices different from a country residence. Now, there is a great deal of character in Mr. Warren's excellent pencil drawing of the "Deep Sea Fisherman's Institute, Newlyn." On one side it appears to rise out of the water, and with its random masonry and plenty of solid walling it is essentially a sea-side building.

Mr. Seller's "Elm Street Schools, Middleton," deserves mention as an original elevation with a good deal of character. Mr. Prentice's "Steingot Manor" (no plan) is disappointing as coming from him; he has done many things much more interesting than this. Mr. Warren's "Gorse Hill" looks rather like an old house altered, though it is not stated to be so. The pencil drawing does not make it very clear what the materials are; it looks rather like a cement house with stone quoins at the angles. The plan is given, and suggests a doubt or two. The dining-room, drawing-room, and kitchen have all the same aspect, which cannot be right for all of them; and should the billiard-room open out of the drawing-room? The billiard-room is generally a place where the men may smoke, and should not be too close to the drawing-room. However, this may have been the choice of the client. "House and Gardens, Townhill Park" (no plan), by Mr. Guthrie, is a rather rough pencil drawing, too large for any architectural interest there is in the house. Messrs. Nicholson and Corlette's "New Boarding House, Winchester College," is in a suitable traditional collegiate Gothic style. "Offices for the Abbe Road Building Society," by Mr. Max Clarke, is a neat little one-storey classical elevation, divided into three bays by attached columns, with large windows between. Mr. Guy Dawber's "Eyford Park" (no plan) shows a little experiment in detail, the projections on the recessed portion being really flat buttresses ornamented with an Ionic capital just below the eaves. "Restorations and Additions to Rushbrooke Hall" (the well-known old moated house in Suffolk), by Mr. Melville Ward, has two small plans marked "before restoration" and "after restoration," but the alterations must be very slight, for it is not easy to trace them. The perspective is a fine view of the old house. Messrs. Blow and Billerey show a large and finely executed water-colour drawing of "Staircase, 10, Carlton House Terrace." This appears to be a new staircase with an elaborate metal balustrade; it is not obvious whether any of the other architectural features are new. The balustrade has a rich effect, but the curves taken by the handrail are rather awkward.

Among things which may be taken as coming under the head of decorative architecture the most important is "The Rand Regiment's War Memorial, Johannesburg," by Mr. Lutyens, shown in a large but far too sketchy water-colour drawing; it is impossible to make out the design of the statue which forms the acroterion, it is merely roughly indicated. Architectur-

ally the memorial is a kind of round-arched and vaulted classic tabernacle with a low domed roof, topped externally by the statue aforesaid. The platform in front is flanked by pedestals with seated figures, with a square pond of water on each side. The general effect of the whole ought to be dignified, but the details are not too well shown.

As usual, there are a good many small coloured designs for stained glass, and (as usual) few of them show anything to distinguish them from the average run of stained-glass design. Mr. Camm's window to illustrate the "Decameron" is good in the figures, but there is too much perspective effect in it for a window. Mr. Travers's "Design for a Stained-Glass Window," consisting of three small coloured panels of figure subjects placed in the middle of varied white leading designs, is worth attention as a design for domestic or civic stained glass. Mr. Bewsey's "Design for a Circular Stained Glass Window," with the Virgin and Child in a vesica panel in the centre, and cherubic heads filling up the exterior space, may work out well, and is a design suitable for the material. Mr. Stead's "Te Deum" window, with its group of angels floating upward, has also the making of a fine window, but as drawn it hardly gives the effect of stained glass, constructionally. This, however, may be only the fault in the manner of drawing; it is the right kind of design for stained glass.

PARLIAMENT AND ST. PAUL'S BRIDGE.

The following resolution has been passed by the Council of the Royal Institute of British Architects:—"That this Council, having considered the evidence offered to Parliament in support of the scheme of the Corporation of London for the construction of a new bridge near St. Paul's, to be known as St. Paul's Bridge, is unanimously of opinion that, if it is carried out as now designed, a great opportunity for the architectural improvement of London will be irrecoverably lost, and that a scheme of such importance ought not to be sanctioned by Parliament until it has been approved by competent artistic authority."

Strong opposition, in which all parties are represented, is to be made to the City Corporation's proposal for a new St. Paul's Bridge when the Bill comes up for the third reading in the House of Commons.

One of the Parliamentary group concerned in the opposition stated in an interview with an "Evening News" representative in the Lobby that the scheme was disapproved by all artistic and architectural opinion, not merely because the bridge would be unsightly, but because it would not be convenient for traffic. "But an outstanding objection to the scheme," said the speaker, "is that it was prepared without any independent advice, and without calling in an architect of any kind, although the problem is essentially an architectural one. A great scheme of this kind, involving two and a quarter millions of what is really public money, and representing compensation to private owners of one and a quarter millions, should not be undertaken without the best independent advice. We do not put forward any specific alternative proposal, because it is impossible to do so until the matter has been more fully considered. But we do think that a scheme could be prepared, at little extra cost, more

worthy of the City of London, and more convenient to the present traffic demands."

In the House of Commons on May 22nd, Mr. Morrell rose to a point of order. He understood, he said, that the Speaker was under the impression, while private business was being transacted an hour ago, that no objection was taken to the Corporation of London (Bridges) Bill, and in consequence it would be taken on report as an unopposed Bill. He very respectfully wanted to point out that not only had he a motion on the paper with regard to the Bill, but he came down to the House specially in order to object to the Bill. When the order was called he rose in his place and objected, and a good many of his friends around him heard him. He also asked that, in view of what had happened, the Speaker should allow them a debate on the Bill on report.

Mr. Dickinson supported the hon. member in what he had said. He (Mr. Dickinson) was also present for the purpose of objecting to the Bill, and when his hon. friend rose he thought the Speaker had accepted the objection put forward by him. The Speaker did not proceed, as he usually did, to take the voice of the House, Ayes and Noes, as a matter of form.

The Speaker said that both hon. members were in error. What happened was this. When the Clerk called out "Consideration of Bill ordered to be on the table," he (the Speaker) said, as he was bound to say, "Ordered to be read the third time." After he said that, Mr. Morrell, who had been engaged in conversation (cries of "No!"), said: "I object." He (the Speaker) observed, *sotto voce*, to the Clerk: "The hon. members are too late." That was what occurred.

Mr. Morrell said he had no sort of doubt that he rose to object the moment the order was called, and he asked the Speaker to accept his word.

The Speaker: I am sorry I cannot take the hon. member's word. I think my own word is perfectly distinct. There is not the slightest doubt about the matter.

The Speaker, after further discussion with Mr. Wedgwood and Mr. Morrell, pointed out that on third reading the hon. member could, if he wished, move to re-commit the Bill in respect of certain clauses.

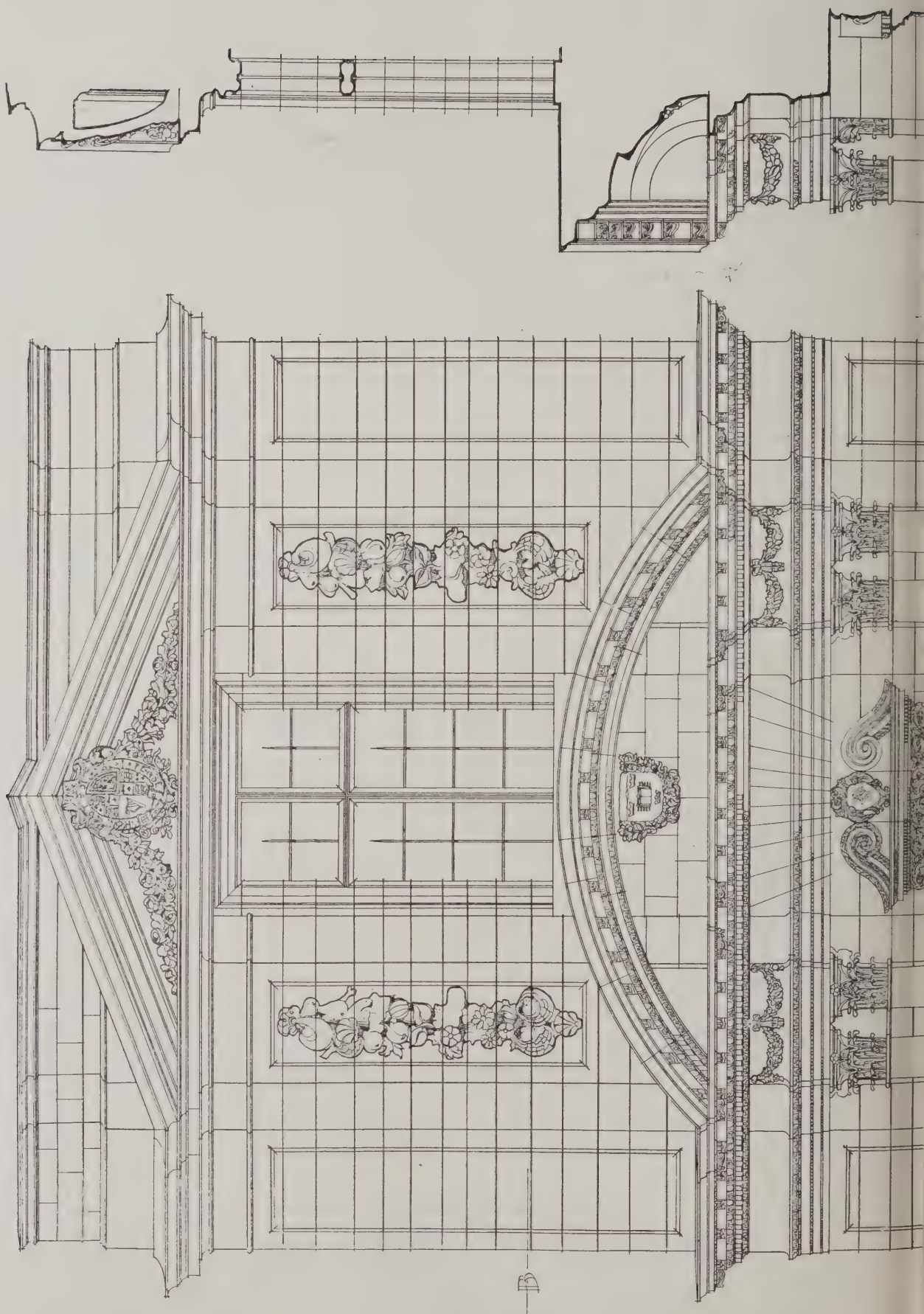
DETAILS—OLD AND NEW.—X.

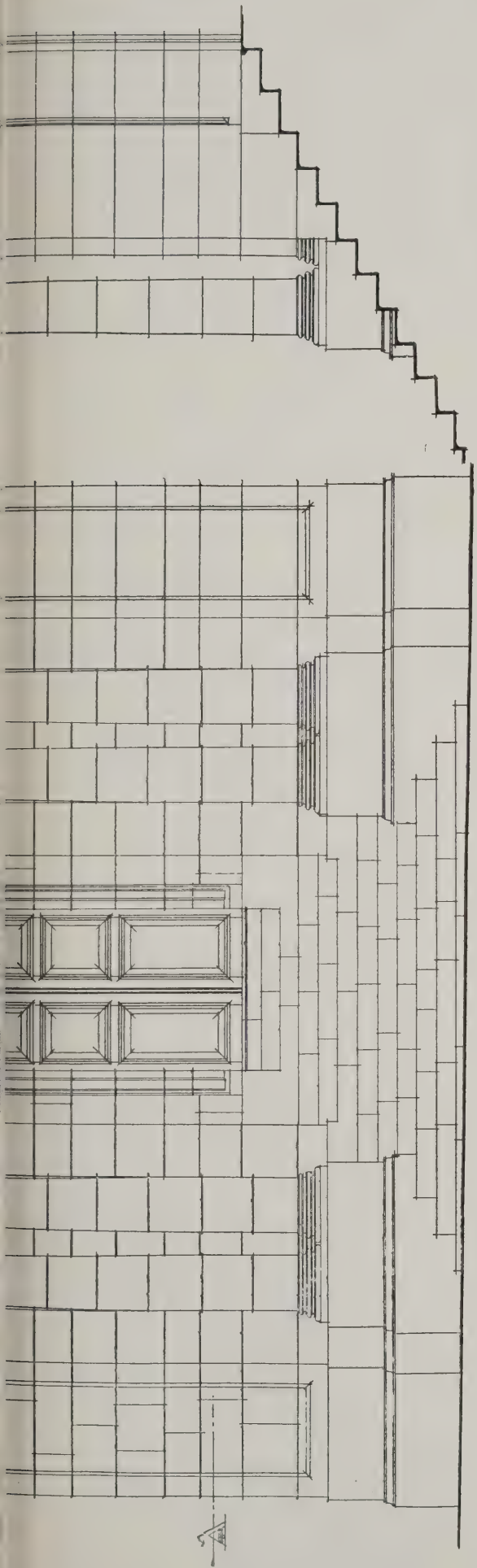
The Ashmolean Museum, Oxford.

The Ashmolean Museum at Oxford is a fine example of seventeenth-century architecture, though now in a badly decayed condition. It was erected in 1677 to receive a collection of curiosities given to the University by Sir Elias Ashmole. The building is now occupied by the compilers of the English Dictionary and the University School of Geography. The design has generally been attributed to Sir Christopher Wren. On an old print, however, the name of the architect is given as "T. Wood," and to this otherwise unknown man may belong the credit of an excellent building. The entrance front faces east. The doorway, approached by a flight of twelve steps, is deeply recessed, with coupled Corinthian columns on either side supporting a curved pediment, the tympanum of which is coved and contains a shield bearing the University arms. The first-floor window is divided by a mullion and transom (as are all the windows on the north front, facing Broad Street), and shows a lingering trace of the influence of the Jacobean builders. The whole front is crowned by a pediment containing the Royal Arms.



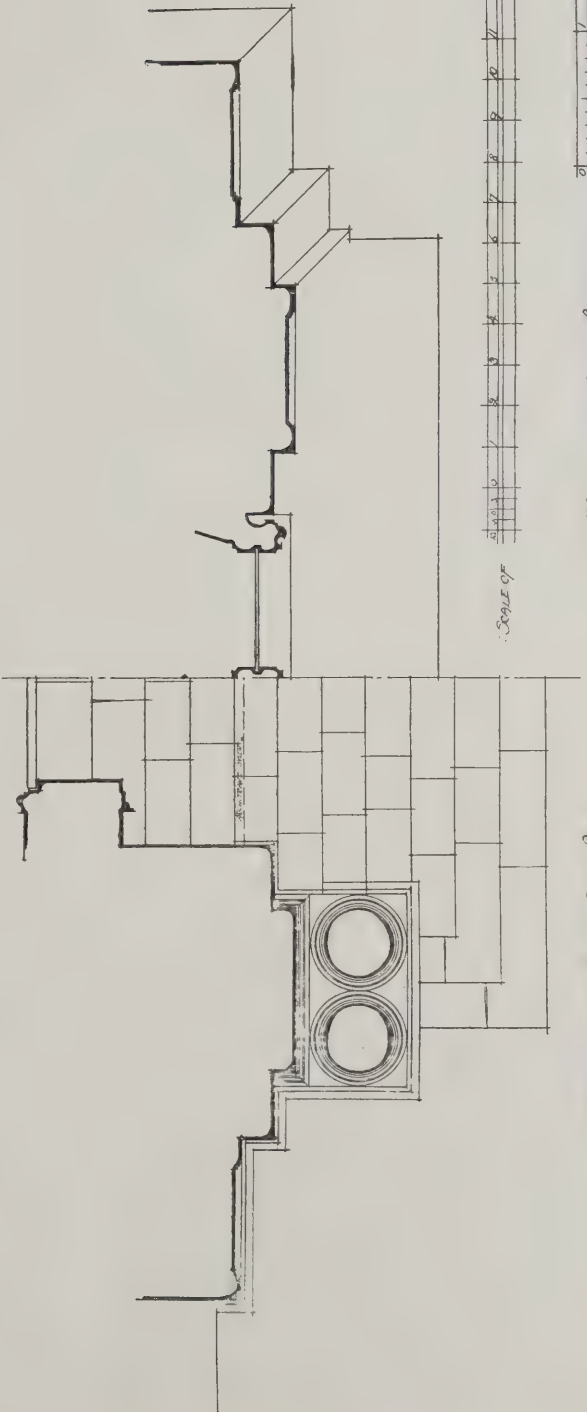
THE OLD ASHMOLEAN MUSEUM, OXFORD.





ELEVATION

SECTION



PLAN

PLAN

ASHMOLIAN
MUSEUM
OXFORD
W. WALKER TODD

SCALE OF FEET

SCALE OF METRES

NEWS ITEMS.

London Homœopathic Hospital.

The Duchess of Hamilton laid, on May 23rd, the commemoration stone of the Nurses' Home in connection with the London Homœopathic Hospital in Great Ormond Street. Mr. Edwin T. Hall, F.R.I.B.A., is the architect.

* * *

New Empire Theatre, Preston.

The New Empire Theatre, Preston, which has just been opened, has Renaissance frontages in stone to Church Street and Tithebarn Street. The theatre and its adjuncts have been erected at a total cost of £65,000. The interior is decorated in Louis XIV. style. The architect is Mr. Edwin Bush, of Preston.

* * *

Surveyors' Institute Examinations.

We are informed that Mr. James Neill's pupils have been highly successful in the recent examinations of the Surveyors' Institution; no less than 80 per cent. of those prepared having passed at their first sitting. The meritorious work of Mr. Neill's pupils has also carried off the Penfold Silver Medal and the Driver Prize of £15.

* * *

Two New Companies.

The following two new companies have been registered:—Denbighshire Portland Cement Co., to acquire the business of a cement manufacturer carried on by F. C. Cure, at Caerwys, Flintshire. Offices: Central Buildings, North John Street, Liverpool. Capital, £40,000. Hollis Bros. and Co., Ltd., to take over the business of timber merchants carried on at Hull and Leicester, as Hollis Bros. and Co. Capital, £50,000.

* * *

New Supper Room at Dublin Castle.

In view of the approaching visit of King George V. to Dublin, it is interesting to note that an elaborate scheme of improvement is being carried out at Dublin Castle, the chief feature being the erection of a permanent supper room on the vacant space beyond the gateway to the west of the Upper Castle Yard. This apartment will be about 80 ft. long and 40 ft. wide, and will be immediately connected with the picture gallery. The cost of the present improvements will amount to about £6,000. The building operations are being carried out by Messrs. H. and J. Martin, under the supervision of the Office of Works, and the decorations are being executed by Messrs. Dockrell and Sons, Ltd. For the foundations, concrete reinforced with expanded metal has been largely employed.

* * *

The Windows of York Minster.

The work of restoring the windows of York Minster, which was commenced in 1908, has made very satisfactory progress. In May, 1908, the clerestory windows on the south side of the nave were commenced, and the work completed in November, 1909. The work connected with the windows on the north side was begun in July, 1909, and the September of the following year saw it finished. There were eleven windows dealt with, and the total cost was £2,593 7s. 1½d., an average of about £235 15s. 2d. per window. The next window to receive attention from the restorers was the east window of the south

choir aisle. The mullions and tracery were found to be a fairly good condition, but the glazing was in a very dilapidated state, and the urgency of the work of restoration was apparent. The cost of repairing this window was £201 12s. The workmen are now engaged on the third window from the south-west tower in the aisle of the nave. It is an exceedingly beautiful Jesse window, the glass dating from the 14th century, and like all the windows in the building, urgently needed strengthening.

* * *

New Workhouse for Neath.

The Neath Board of Guardians are discussing a scheme, prepared with the assistance of the Board's architect, Mr. J. C. Rees, for the erection of workhouse and infirmary buildings, for which it is proposed to obtain Local Government Board sanction for the borrowing of £48,500.

* * *

School Planning.

We have received from the author, Mr. William H. Webb, Licentiate R.I.B.A., M.R.San.I., a handy pamphlet (Sanitary Publishing Co., Ltd., 1s. net) on "School Planning at Home and Abroad," with numerous illustrations, mainly consisting of plans of important foreign schools, with a few representative English plans. The author rightly lays stress on the hygienic point of view, and shows a full and competent knowledge of his subject.

* * *

Statue of Captain Cook for the Mall.

As sufficient money has now been raised by subscriptions for the erection of a statue to Captain Cook, permission has been given for the statue to be placed on the Mall side of the Admiralty Extension, and the commission has been given to Sir Thomas Brock, K.C.B., R.A., the sculptor of the Queen Victoria Memorial. The pedestal on which the statue will be placed is not far from the memorial to the Marines, and will stand out against the road.

* * *

The New Manchester Y.M.C.A. Premises.

The new premises of the Young Men's Christian Association in Manchester, which were formally opened on May 22, and of which an illustration was given in last week's issue of this journal, at page 559, contains, in the basement, a smoke-room, billiard-room, and restaurant. On the ground floor there are a reception hall or lounge, handsomely furnished, and a suite of offices for the secretary and his staff. Library, reading and writing rooms, and the large public hall are on the first floor. On the second floor there are an entrance to the gallery of the large hall and juniors' classrooms. The third floor is given up to the juniors' common room. Then there is the education section—on the fourth floor—and on the fifth of the floors there is the gymnasium, and near to that is the swimming bath. On the top floor there are a running track and five courts. The architects are Messrs. Woodhouse, Corbett, and Dean.

* * *

Lamp Standard Clock at Marble Arch.

A public clock, presented to the borough of St. Marylebone by Mrs. Mocatta, of Great Cumberland Place, was started at Marble Arch last week. The clock consists of two large dials facing east and west, fixed upon an arc lamp standard in Oxford Street, opposite the end of Park Lane. These dials are operated by an electrical

time transmitter contained in a cast-iron pillar on the refuge. This instrument receives an electrical impulse every hour from Greenwich Observatory, and transforms it into the half-minute impulses necessary to propel the hands of any number of clock faces. It does this automatically, so the clock never requires to be wound up. Though clock faces have as yet only been fixed to one arc lamp standard, there is no reason why a pair should not be mounted on every lamp-post down the street, as the controlling mechanism will operate any number, and the dials themselves are ideally simple, the only works they contain being one wheel and an electro-magnet. The work has been carried out by the Synchronome Company on the system invented by Mr. Hope-Jones, who has been advocating municipal time service for many years.

* * *

Stands in the Mall.

A correspondent writes to the daily press to complain of the rumoured intention of the Office of Works to erect large stands in the Mall approach. Premises, he says, have just been acquired at great expense, and by a special procedure, in order to widen the approach from Charing Cross to the new Admiralty Arch, and if the scheme now said to be under consideration is carried through, the architecture of the Arch will be practically obscured by huge wooden structures, and the approach, as seen from the Strand, will be if anything meaner than it was before the expenditure of public money on the improvement. Another matter of less general interest, but of no little importance to the parties concerned, is that the view of the frontagers in Spring Gardens will be seriously impaired if not extinguished. At such a time as the Coronation thousands of visitors will expect to have an opportunity of seeing the new Admiralty Arch, but the erection of seats flanking the semicircular space in front of it would deprive them of the chance, and it would also circumscribe the new exit from the Mall in what might easily prove a dangerous degree.

* * *

Chapel for the National Nautical School, Portishead.

This chapel, of which the foundation stone has just been laid, has been designed in Renaissance style, to harmonise with the school buildings, by Mr. Edward Gabriel, and is to cost £4,500. The general contractors are Messrs. Samuel Martin and Co., of Bristol. The plan of the chapel consists of a nave 63ft. long and 33ft. wide, with narthex at the west end 8ft. wide. The chancel will be 20ft. 6in. long by 33ft. wide, with apse at east end 9ft. by 22ft. There will be north and south transepts, organ chamber, and vestry, with heating chamber in the basement. The accommodation consists of sittings for 360 in the nave (for officers and boys), 50 seats for visitors in the north and south transepts, and 25 seats for the choir. The height of the nave is 35ft. to the roof beam, the roof being of an open timber construction. The materials being used are local stone for the facings of both exterior and interior walling, and Bath stone for the dressings. The nave will be laid with wood block flooring, the chancel floor being of marble. The principal entrance is at the west end. There are also entrances for visitors in both the north and south transepts, which will serve also as emergency exits.

SOCIETIES AND INSTITUTIONS.

London Master Builders' Association.

The monthly meeting of the Council of the above Association was held at Koh-i-noor House, Kingsway, on May 18th, Mr. G. Bird Godson, President, in the chair, supported by a large number of members.

Reference was made to the Home Office Departmental Enquiry into lead poisoning, and the evidence on the subject to be supplied.

It was reported that the House of Lords decided in favour of the builder in the final appeal case of Roberts v. Hickman. The financial assistance voted to Messrs. Roberts, in the event of their case not being successful, will, therefore, not be claimed. Great interest has been aroused by this case, which greatly affects the interests of architects and builders.

The effect of the National Insurance Bill upon the trade was fully discussed, and the Council was unanimously of opinion that if the additional burdens set forth in the Bill are to be imposed upon the trade, employers would be glad to see the principle extended, so that their present risks, under the various Employers' Liability Acts, should be included in one payment; and the Association's representatives on the Employers' Parliamentary Council were requested to do their best to attain this end.

A further election of new members followed. THOS. COSTIGAN, Secretary.

Royal Sanitary Institute.

The provincial sessional meeting of the Royal Sanitary Institute at Exeter will take place on June 2nd and 3rd. The meeting on June 2nd will be held in the Royal Albert Memorial, University College, at 7.30 p.m., when a discussion will be opened by Mr. J. Jerman, F.R.I.B.A., on "Ventilation in Theory and Practice," Mr. H. Percy Boulnois, M.Inst.C.E., in the chair. On Saturday, June 3rd, members meet at the Guildhall, and thence proceed to the sewage disposal works, which are on the septic tank system. Luncheon will be taken at the Royal Clarence Hotel at 1 p.m., and at 2.30 brakes will start from the Guildhall for the corporation waterworks at Pynes.

Northern Architectural Association.

Members of the Northern Architectural Association have visited the General Post Office extensions at Newcastle, and the new premises of the Northern Conservative Club. The visitors were shown round the new portion of the Post Office by Mr. G. Petrie, H.M. Clerk of Works. At the Conservative Club they were taken in hand by the architects, Messrs. Cackett and Burns-Dick.

The report of the Council for the fifty-second session shows that the membership now stands at 233, made up of 92 members, 95 associates, and 46 students. The students are eleven fewer than last year, and on this fact there is the curious comment, "The decrease in the number of students may be regarded as satisfactory in view of the remarks contained in the report of three years ago with reference to the overcrowding of the profession." A most interesting gift to the Association is recorded—that by M. Parker Brewis, F.S.A., of two promissory notes, dated respectively 1754 and 1755, signed by the brothers Robert and James Adam. It is recorded that, representations having been made by local lead manufacturers with a view to local architects specifying sheet lead, lead pipes, and white-lead manu-



DESIGN FOR A RIVERSIDE WAREHOUSE. BY A. C. BULMER BOOTH. A.R.I.B.A.

This design was recently prepared for the front of a new warehouse on the north bank of the Thames, adjoining offices at the rear, facing Upper Thames Street. The lower storey would be executed in grey granite, fine axed, the upper storeys faced with red brick and Portland stone dressings; sashes and panels between the windows to be in steel and bronze. The nature of the business for which the premises were proposed to be used necessitated an exceedingly substantial building, and the design is primarily intended to express strength. The work is at present in abeyance.

factured in the North country, the matter has received careful consideration, and it is felt that the proposal has much to commend it.

Attention having been drawn to the fact that the Ecclesiastical Commissioners publish a stereotyped set of plans, specifications, and quantities for Parsonage Houses, which the Council consider as detrimental to architectural practice, urgent representations have been made to the Royal Institute in the matter, and it is satisfactory to note that the Council of the Royal Institute, after giving careful consideration to the subject, have urged the Ecclesiastical Commissioners to discontinue this undesirable procedure.

A suggestion having been made that the South Shields Corporation should ask the Borough Surveyor to prepare plans, specifications, etc., for proposed new schools, a letter was forwarded to the Town Clerk urging the undesirability of such an arrangement. The Town Council afterwards appointed an architect in connection with this work. It is further recorded

that the conditions of competition in connection with the proposed new schools at Wallsend had received careful consideration, and in view of there being no statement that a professional assessor would be appointed, or that the author of the design placed first would be appointed to carry out the work (unless there was some valid objection to his employment), it was decided to ask members of the Association to take no part in the competition unless the conditions were made satisfactory.

Sheffield Society of Architects.

At the annual meeting of the Sheffield Society of Architects and Surveyors, held at Sheffield University, a satisfactory year's work in the interest of the profession was disclosed by the Council's annual report, and the statement of accounts was also considered satisfactory. Officers were elected as follows:—President, Mr. J. B. Mitchell Withers; vice-president, Mr. A. F. Watson; treasurer, Mr. F. Fowler; hon. secretary, Mr. James R. Wigfull;

council, all the officers and Messrs. W. G. Buck, F. E. P. Edwards, R. W. Fowler, C. B. Flockton, J. R. Hall, H. L. Paterson, E. Winder, C. F. Innocent, H. I. Porter, and F. H. Wrench. In proposing a vote of thanks to the retiring president, Mr. Edwards warmly acknowledged the labours of Mr. W. J. Hale for the society, which he said had gained increased prestige during his period of office. Mr. Wigfull seconded, and the vote was heartily accorded.

*Incorporated Society for Promoting the
Enlargement, Building, and Repairing of
Churches and Chapels.*

This society held its usual monthly meeting on May 18th, at the Society's House, 7, Dean's Yard, Westminster Abbey, S.W., the Reverend Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.: Building the church of S. Gabriel, Bishopwearmouth, Durham, £250; rebuilding the churches of S. James, Milton, near Portsmouth, £100; and the Bourne, S. Thomas, Surrey, £70; and towards enlarging or otherwise improving the accommodation in the churches at Brotherton, S. Edward the Confessor, Yorks, £25; Hucclecote, S. Philip and S. James, near Gloucester, £30; Layer Marney, S. Mary the Virgin, Essex, £60; Mold, St. Mary, Flint., £100; and Stoke S. Milburgh, St. Milburgha, Salop, £15. Grants were also made from the Special Mission Buildings Fund towards building mission churches at Caergeiliog, near Rhoscolyn, Anglesey, £30; Heathfield, Sussex, £25; and Holmer, S. Mary, near Hereford, £25. The following grants were also paid for works completed:—East Cowton, All Saints', near Northallerton, £70; Birchington, All Saints', Kent, £35; Tarrant Crawford, S. Mary, Dorset, £50; and Litherland, S. Andrew, near Liverpool, £40. In addition to this, the sum of £90 was paid towards the repairs of ten churches from trust funds held by the society.

THE CORROSION OF METALS.

At the annual meeting of the Iron and Steel Institute a paper on "The Corrosion of Metals" was read by Mr. Percy Longmuir, who remarked that, in view of the admirable work presented by Cushman, Walker, and others, it must be admitted that, to a certain extent, composition had a decided effect on resistance offered to corrosion. Granting this, it must also with equal truth be admitted that purity of composition alone was not the clue to immunity from, or retardation of, corrosion. All who had had experience in this direction must have found numberless cases in which composition of metal had been of considerably less moment than its environment. As an illustration, brass fittings offered good examples of corrosion, especially when exposed to the simultaneous action of moisture and carbon dioxide.

Many samples of ordinary iron rust had been examined, and one of the distinct features lay in the appreciably high content of sulphur. So far as the author had gone, this had been found to apply only to rust resulting from atmospheric action.

Samples of rust from rails had been gathered from various localities, and five typical results showed a sulphur content ranging from 0.244 per cent. to 0.574 per cent. The bulk of the work done in this direction proved that average samples of

rust from rails laid in normal positions did not contain less than 0.2 per cent. sulphur. Generally speaking, the sulphur content of British rails was below 0.06 per cent. The air of several railway tunnels had been examined. In one case the sooty deposits on the side walls gave 2.83 per cent. sulphur. Corroded deposits from the rails in the tunnel gave (1) 3.68 per cent. of sulphur, and (2) 2.89 per cent.

The problem of corrosion did not lie in the amount of metal lost by rust or decay, but in the influence exerted on the metal remaining intact and apparently unaffected. Deterioration was found which was not explained by mere loss in weight or by change in the ordinary composition of the metal. In the case of non-ferrous alloys Arnold showed in 1898 the possibility of failure due to deterioration or dezincification of brazing solders and Muntz metal. In 1903 Milton and Larke, in a paper on the decay of metals, gave many instances of deterioration in non-ferrous alloys and also in cast-iron. Generally speaking these examples represented definite chemical change in the composition induced by external causes. With steels evidence of chemical change was not easily found, and although physical changes were apparent, they could not be explained on the ground of definite change in composition. It was not easy to follow the brittleness induced in steel when subject to corrosive action, for not infrequently a series of factors might be operating together, and it then became difficult to isolate one single factor. This aspect was of particular interest in the case of rails, and in order to get a good starting-point the author had tested a number of new and unused rails in various ways, and gave the results obtained from two rails.

At the same meeting, a paper on "The Influence of Impurities on the Corrosion of Iron" was contributed by Mr. John W. Cobb, who, in summarizing his work, said that the results were interpreted on the electrolytic theory of corrosion as elaborated by Mr. W. H. Walker, Mr. Cushman, and others. Pure iron was definitely electro-positive to most of its impurities—that was, a current was found to flow through the liquid from iron to impurity, the iron going into combination with some substance in the liquid, and the impurity remaining undissolved. Among such impurities were found phosphide, sulphide, carbide, oxide, and silicate of iron. With carbon (graphite) the effects were particularly marked. All the iron alloys tried (excepting ferro-manganese) were also electro-negative to pure iron. With sulphide and silicate of manganese little or no current flowed, because both were non-conducting. Manganese and 80 per cent. ferro-manganese were found definitely electro-positive to iron, manganese going into solution, while iron remained undissolved. Every piece of commercial iron showed electrical effects with any other, and the effects between portions of the same piece were always sufficient to induce corrosion when the other conditions were satisfied. Microscopic examination disclosed the same general action before noticed as occurring between iron and its impurities: the iron went into solution around the impurity. Manganese sulphide on iron went into solution, and the iron also, while with manganese silicate and iron neither was attacked. Manganese and ferro-manganese went into solution on iron, which was unattacked, and even preserved. The presence of an impurity determined so many corrosion centres for iron, and so its influences depended more on quality and distribution than quantity.

POINTS IN DAM CONSTRUCTION AND TRENCH WORK.

At the sixteenth annual general meeting of the Association of Water Engineers, a paper on "The Geology of Dam Trenches" was contributed by Mr. Herbert Lapworth, who said that the selection of an efficient and economical site for a dam and the question of deciding when watertight strata had been reached in the trench excavations formed two of the most difficult problems with which the water engineer had to contend. The history of reservoir construction seemed to show that experience alone did not always guard against failure, and probably also many instances of success must be attributed very largely to good fortune. A complete list of the reservoir failures in America would form a lengthy though exceedingly interesting document. In this country also our own reservoirs might be said to be capable of classification from the aspect of economy. Universally, however, as the result of experience in the early days of dam construction, there had been a movement in the direction of greater care, both in selecting reservoir sites and in trench work generally, but the difficulties of this class of work had not even yet proved surmountable. The importance of selecting the best site that could be found could hardly be exaggerated, not only from the point of view of a possible failure, whether total or partial, of the work, but from the consideration of cost. Every yard added to the average depth of a trench might mean an expenditure of thousands of pounds, and consequently the careful selection of the best possible site might mean an enormous reduction in the cost of the work.

The question whether leakage from a full reservoir, either under or around the trench, was serious or not was one on which opinions differed among engineers of different countries. In America and India, for example, puddle trenches were not carried to such great depth as in Britain. Sometimes the puddle core was altogether omitted and leakage was expected, systems of drains being provided for carrying away the percolating water. The general opinion in these countries seemed to be that it was a waste of money to spend large sums in order to stop small leakages of water. So long as the leakage did not affect the stability of the embankment or wash away the puddle in a clay puddle trench, there was something to be said for this attitude; but the difficulty when dealing with an imperfect piece of trench during construction always lay in deciding what was likely to be the amount of leakage when the full pressure of the reservoir came upon the foundations. The catastrophes that occurred in the early days of reservoir construction in this country, though not affecting so much the question of selecting sites, had led British water engineers to aim at perfect water-tightness of the trench work, and the general practice, if possible, was to carry the work laterally and downwards into retentive material. It had not always been possible to secure these ideal conditions, the extra cost involved in obtaining them having sometimes rendered such a course prohibitive, and the result had been considerable leakage, sometimes unforeseen, sometimes expected, or even created by leading the water up from the foundations in vertical pipes. The paper concluded with references to dam trenches in igneous and older rocks, and with a list of notable reservoir failures.



Altar in the Lady Chapel.

MARBLE AND MOSAIC WORK AT WEST



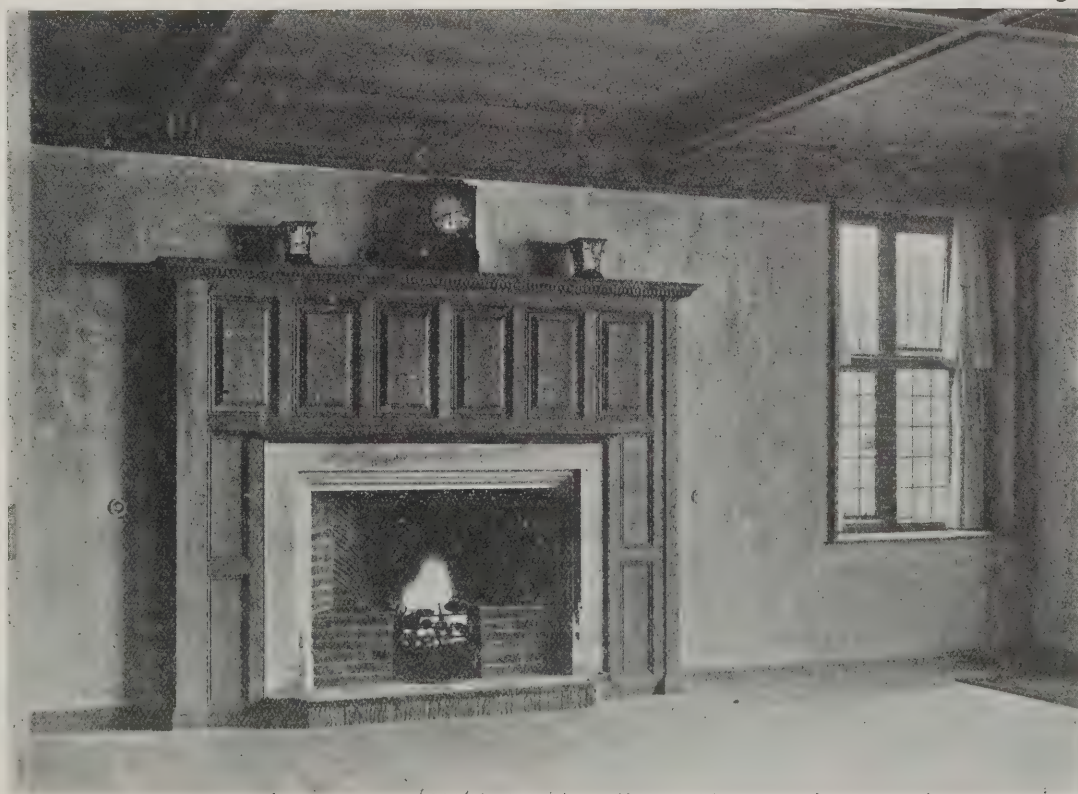
The Chapel of Holy Souls.

THE ARCHITECTS' & BUILDERS' JOURNAL.

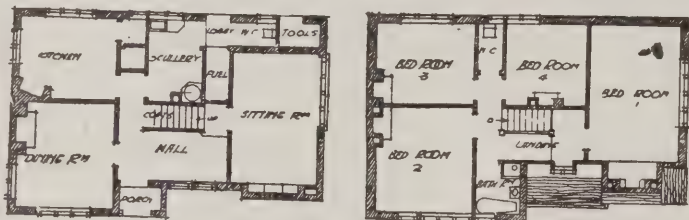
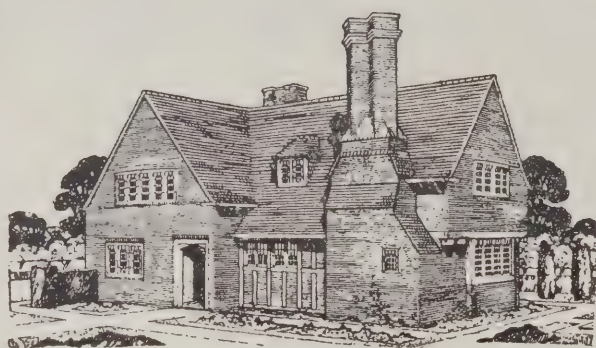
WEDNESDAY,
JUNE 7th, 1911.

Volume XXXIII.

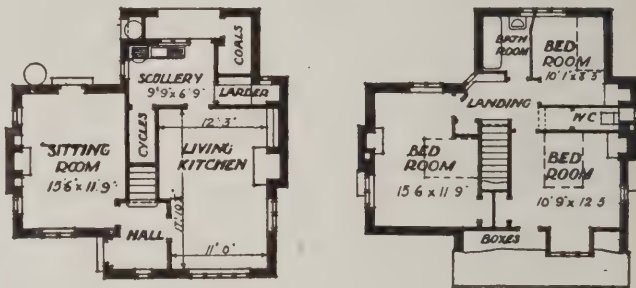
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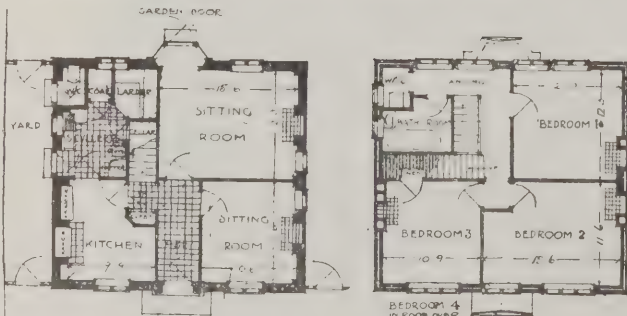
CHIMNEYPiece IN DINING-ROOM, TUESLEY COURT, NEAR GODALMING.
E. GUY DAWBER, F.R.I.B.A., ARCHITECT.



Class I. Second Prize, £100. Reginald T. Longden, Architect.



Class II. Second Prize, £100. Herbert A. Welch, Architect.



Class I. First Prize. Gold Medal and £250. Geoffrey Lucas, A.R.I.B.A., Architect.



Class II. First Prize. Gold Medal and £200. C. M. Crickmer, Architect.

The cost of the cottages was not to exceed £500 in Class I. and £375 in Class II.

THE PRIZE COTTAGES AT THE ROMFORD GARDEN SUBURB, GIDEA PARK, ESSEX.

THE ARCHITECTS' & BUILDERS' JOURNAL.

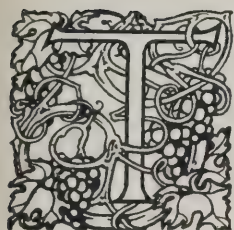
JUNE 7th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33, No. 854.

NOTE : *The List of Contents will be found on page IV. of the front advertisements.*

Romford Garden Suburb.



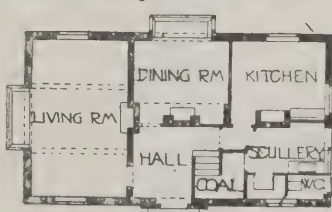
LHURSDAY, the first inst., witnessed the inauguration of another Garden City, that on the site near Romford which used to be Gidea Park. The premiated plans for the laying out of the land we have already given. A considerable number of houses are now erected on it, and these (with some exceptions that were not intended to be classed in the competition) constituted a kind of rather scattered exhibition of designs in domestic architecture, numbered and named, for the best of which, in two classes, prizes were to be given.

The land, which was seen last Thursday under the most favourable possible conditions of weather, is really, we presume, the ancient park of Gidea House, a fine old late Renaissance mansion with a good deal of history attached to it. That the site is very flat is not unfavourable to a Garden City scheme, and there are plenty of fine trees on the land, which will no doubt be religiously preserved. We have not, however, been able to find any precise statement as to what it is proposed to do with Gidea Hall itself; a part of the house is in temporary use for an exhibition of sanitary and other fittings. The best use to put the old mansion to would be to make it a permanent museum for the artistic and scientific illustration of the district, or a museum of antiquities connected with the history of Romford.

The compilers of the catalogue have introduced in a kind of preface extracts from opinions on the subject of domestic architecture from various writers, mostly non-professional, though we see that Mr. Newton, speaking as an architect, made bold to say that the average man who wants a plain simple house with fairly high, well-lighted rooms "is rather hardly used when he finds that instead of this he has to sit in a sort of low farmhouse kitchen, watching the smoke from a sulky log creeping up a cavernous chimney, his hard uncushioned chair gritting on a rough stone floor." That is just what we have often thought; the re-action against commonplace houses has been carried often to an absurd extreme. Mr. Thomas Hardy advocates "an independent bath-room to each bedroom"; this is nearly always the case in a good modern middle-class French house, but it can only refer to a larger class of house than those illustrated at Romford. In any house where servants are kept, they should have a bath-room for themselves. Mr. H. G. Wells thinks that "the general substitution of horizontal for vertical arrangements seems an immense improvement"; we presume he means spreading out the house horizontally rather than increasing its vertical height. Mrs. Fawcett makes some most sensible suggestions; "inattention to aspect" is a frequent fault (we have often called attention to it); and also "the architect often aims at what he considers a picturesque roof, involving a lot of work and expense in erection, and resulting in a very serious deterioration of the bedrooms under it." Perfectly true, except as to one point; Mrs. Fawcett does not realise that roofs cost less than walls; the low wall and high roof is

partly the result of the effort to build cottages cheap, although "picturesqueness" is no doubt sought for by cutting up the roof into odd and inconvenient angles. Mr. Eden Philpotts considers (quite rightly) that "in the beautiful new houses too little attention is devoted to light, and the windows are too small." Small windows are supposed to be picturesque, but they are not hygienic. Mr. C. A. McCurdy, M.P., thinks that "the greatest economy that could be introduced in house-building would be the flat concrete roof covered with asphalt and used as a roof-garden." The roof-garden is only a necessity in towns; it is not wanted in the country, though there is no doubt that in the country flat-roofed cottages would be much more convenient and practical than those with very steep high-pitched roofs which are such favourites with our cottage architects. But they would cost more, and would be more difficult to make attractive in appearance; that must be admitted.

In spite of all this practical wisdom in the shape of quotations from eminent writers, however, the houses at Gidea Park seem mostly to follow the present favourite type of the "picturesque"—high roofs and small windows. In spite of Mrs. Fawcett's advice about "aspect," not one of the plans published in the catalogue has a north point marked, and scarcely any of them have scales, though in a good many cases the dimensions of rooms are figured. The houses for which prizes are offered are in two classes; Class I., costing £500; and Class II., costing £375. There is therefore none of the attempt to build cottages at almost impossibly



CLASS I. HIGHLY COMMENDED.
W. CURTIS GREEN, A.R.I.B.A., ARCHITECT.



CLASS II. PERCY B. HOUFTON, ARCHITECT.

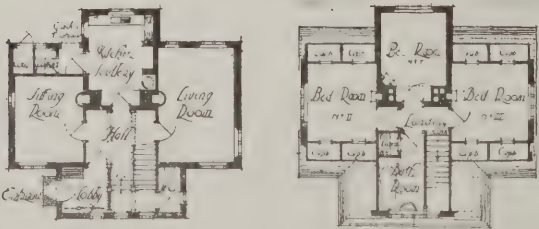
low figures which was a feature at Letchworth. Looking over those which are illustrated, we first notice a well-planned house of Class I., by Messrs. Young and Hall, in which the exterior design is simple and the roofs not cut up, and the two sitting-rooms and kitchen all with a different aspect, as should be the case; the plan, however, shows the frequent mistake of having the kitchen window on the right instead of on the left hand of the fireplace. Messrs. Parker and Unwin show a plan (not for competition) which has some special character in the one large living-room with its long window along the side; a delightful room in summer, but it

would be cold in winter, with its three outside walls. There is too much roof in the design, and the kitchen window is opposite the fireplace, so that anyone cooking must stand in her own light. Curious that so many architects cannot learn these very simple things, which any housekeeper could tell them. Mr. E. Turner Powell's house in Heath Drive (also not for competition) is very well planned in a very compact manner (the kitchen window in the right place here); the exterior is undeniably picturesque, but it is nearly all roof, which must be bad for the bedroom sections. Mr. Curtis Green's Class I. house, planned, as he says, "in the simplest possible manner," is very good and the exterior treatment simple and pleasing; the manner in which the fireplaces are grouped near the centre of the house and all connected into one central chimney-stack above the roofs is excellent.

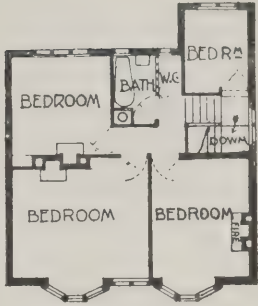
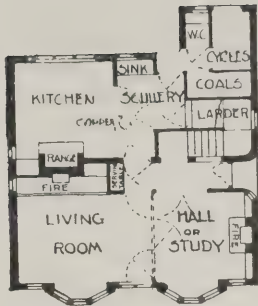
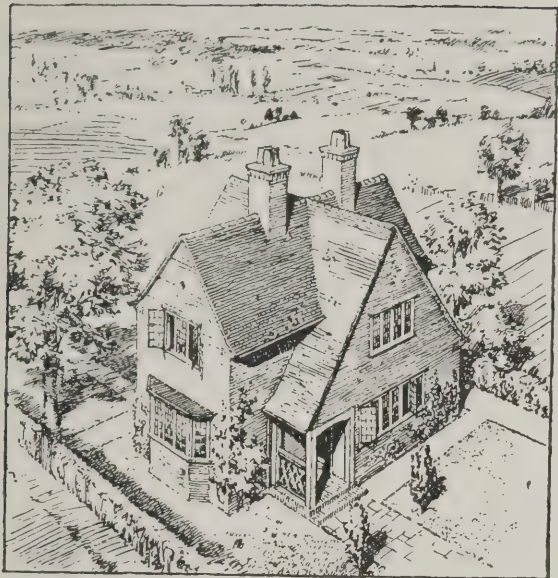
Mr. Tilden's plan (Class II.) shows a special point in the position of the principal living-room as a projection at the back of the plan, affording, as the architect says, "more seclusion than the orthodox arrangement in which the principal rooms are kept to the front of the house." The fireplaces are kept towards the centre so as to allow of gathering up the flues into a centre stack. It is not a bad little house, and the exterior appearance is picturesque. Mr. Crickmer (Class II.) follows the same idea in keeping the living-rooms at the back, but they are not so arranged (as in the last-mentioned example) as to have three outside walls. "The drainage and plumbing work are near the front, to reduce cost," a point worth noting. The high-pitched roof is kept to one longitudinal ridge, avoiding the cutting up of roof lines, which is a defect in so many of the designs. This is a very good and compact cottage, and the kitchen window is properly placed for light. Messrs. Van't Hoff and Maxwell's cottage (Class II.) is also a good one. Messrs. Forbes and Tate's plan (Class I.) has merits, but it was a mistake to bring the ground floor w.c. door inside the house and so near the larder; it should have had an outside door; in these small houses it is best to keep a w.c. entrance as much outside as possible. Mr. Geoffrey Lucas's Class I. house has decided merits from its simplicity and compactness both of plan and design. Everything is kept within a square of out-



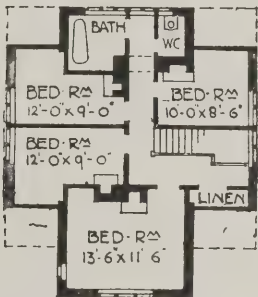
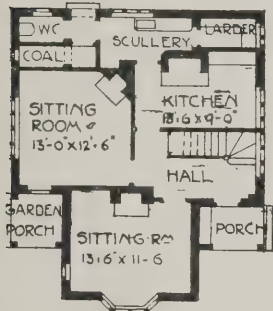
CLASS I. CLOUGH WILLIAMS-ELLIS, ARCHITECT.



CLASS II. VAN'T HOFF AND MAXWELL, ARCHITECTS.

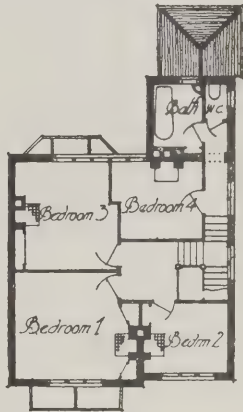
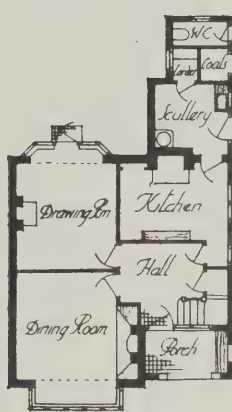


CLASS I. FARRY PARKER AND RAYMOND UNWIN, F.R.I.B.A., ARCHITECTS.



Not for Competition.

HOUSE IN REED POND WALK, ROMFORD GARDEN SUBURB.
E. J. MAY, F.R.I.B.A., ARCHITECT.

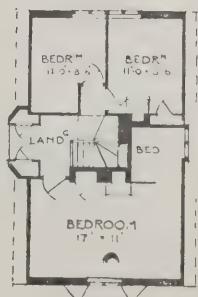
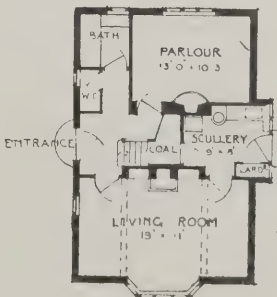


CLASS I. KEITH D. YOUNG AND H. HALL, F.R.I.B.A., ARCHITECTS.

side walls, with a single hipped roof and a level cornice all round; the lighting is good; the ground floor w.c. is kept with an outside door, and no space is lost anywhere. Mr. E. J. May's plan would have been better if he had reversed the w.c. so as to have the door outside; and the kitchen light is in the wrong place again; in other respects it is a compact well-arranged plan. This design, however, is not in the competition. Mr. Baillie Scott's Class I. house is, as one would expect, very pretty externally, looking a good deal like an old country farmhouse, but the windows are unwholesomely small—a reversion to the days of window-tax, which may be very picturesque but is totally unpractical.

The result of the competition is that the prize in Class I. has been awarded to Mr. Geoffrey Lucas, and with good reason, for a house less picturesque but more practical than many; and the prize in Class II. to Mr. Crickmer. It is worth notice that both these houses have simple lines in plan and roofing, a consideration which may suggest in future similar competitions the value of simplicity of line in small houses. An examination of some few of the houses *in situ* (it was impossible, as a question of time, to go over many) led us to form a very high opinion of the Class I. house by Mr. Curtis Green, before alluded to. The exceedingly simple lines of the plan enable so much accommodation to be got inside, without any inconvenient crowding or odd angles, that on looking at the comparatively small size of the exterior it is difficult to realise that so much could have been got into it; and the solid though plain treatment of all the interior woodwork is to be commended. It would be a charming small house to live in, but we must confess that we can hardly imagine it as one that could be built, finished as it is, for £500.

While there is a great deal that is good and interesting in the variety of small houses on this estate, we cannot consider



CLASS II. ERNEST WILLMOTT, F.R.I.B.A., ARCHITECT

this, any more than other exhibitions of the same kind, as solving the problem of the small house for the present day. In the first place, this is a 9-inch wall architecture, and although such houses may be very pleasant dwellings in summer, they are likely to be cold in winter, more especially when, as in a good many instances, the principal living-room has three outside walls. Messrs. Parker and Unwin seem to have realised this, for they have provided two fireplaces in their long and very pretty living-room; but that hardly makes for economy of living. Then there is the passion for high-pitched roofs, which are supposed to be picturesque, but which lead to bedrooms with sloping ceilings coming low down on the walls, and dormers cut through them for windows. Mr. Ronald P. Jones, in some houses in Heath Drive, which were not built for competition, has flown in the face of the whole prevalent taste in garden cities by building brick houses with horizontal cornices and no visible roof, which most people will no doubt think dull and even ugly, but which contain the best and most roomy interiors of any. If he had managed to give a little more character to these houses without losing the horizontal line, they would have stood as a very good protest against the over-acted picturesque; in this respect they might have been better done, and been made more attractive in appearance than they are, and have thus taught their lesson more effectively.

We should like to see a Garden City competition under the condition that roofs should be either flat or not above quarter-pitch in slope, and see what would come of that.

Sculpture at the Royal Academy.

THE movement that there has been of late years towards a kind of ornamental treatment of sculpture, with the accompaniment of architectural details expressed in variously coloured materials, is prominently illustrated in Mr. Reynolds-Stephens's "A Royal Game," which takes a central place in the Octagon Hall, and is undoubtedly the most important and successful piece of sculpture of the year. The plaster edition was exhibited three or four years ago, and attracted a good deal of attention; it now appears in its finished form, in bronze, with the important architectural pedestal relieved with applied or inlaid bright metal. As a piece of decorative design it is admirable in effect; and the character and expression in the two heads—the obvious anxiety of Philip and the cool assurance of Queen Elizabeth, as the two play a game of chess with ships—make them a kind of summary of the historical situation. Had a piece of sculpture of equal merit, dealing with some crisis in the history of France, appeared at the Salon, it would undoubtedly have been purchased by the Government for some public building; but our Government, like Gallio, cares for none of these things. The Royal Academy, however, have done the right thing in purchasing the work out of the Chantry Bequest; the sculptor will not, indeed, obtain the money value of the work in that way, but it is, at all events, a fitting recognition of a remarkable production. The realistic costume of the two figures is not what we should like to see in marble, but in bronze it is suitable enough. The main material of the pedestal is not ordinary bronze, but a composition devised by the sculptor, with a surface and effect of its own.

One may have in sculpture mere modelling of the figure or a figure expressive of an idea. It is quite possible for a nude figure to have a high artistic value merely as a truthful and powerful expression of life; but Mr. Pegram's large group of "Nereus and Galatea," which fills the other central floor position, is hardly of sufficient interest to justify its size; both subject and treatment seem rather commonplace. Among the works round the hall are Mr. Garbe's unpleasing but poetically suggestive design "The Egoist," a bronze replica of a work which was formerly exhibited in plaster, and a bas-

relief "The Voice of the Past," which also aims at the expression of an idea, not unsuccessfully. Mr. Clemens has also put a thought into his fine nude figure of a man by naming it "Victory," representing not the triumph but the compunction of the victor. But there is not much that is very attractive in the Central Hall. Mr. Pomeroy's "Bacon" is a bronze costume figure of the usual kind, for a monument we presume; good of its sort, but not interesting. "Prosperity," a bronze figure for some General Assurance buildings, seems intended to illustrate the saying about "putting your best foot foremost," with singularly awkward effect. The large "Model for a Memorial," on the other side of the hall, seems intended also to convey some meaning or moral in the colossal figure with his legs in some kind of bandages; but it is ugly, and the first business of sculpture, whatever intellectual meaning it may convey, is to be beautiful. Mrs. Ralph's "Dance of Life" is a good bronze relief, and Mr. T. M. Crook, in "Mysteries," gives a well-modelled figure of a young girl with a very expressive head.

The lecture-room is rather depressing. We do not know when we have seen the centre of the floor so poorly occupied; two nude figures, absolutely weak in style and design—"Hesitation" almost absurdly so; the King in a great coat, with a telescope, the Queen in a walking-dress, occupy the corresponding places at the opposite end of the room; and, however gratifying to loyalty, are hardly the kind of work the art of sculpture was intended for. Two recumbent memorial figures, one a late general with his boots on, neither of them very remarkable, occupy the sides of the room. Sir G. Frampton's "Peter Pan" memorial, to be erected in bronze in Kensington Gardens, is the only relief to the pervading commonplace of the works on the centre of the floor. The figure of Peter Pan with his pipes, at the top, is charming; the smaller-scale groups climbing upward on the pyramid show a good deal of pretty fancy, though the outline of the whole is rather ragged. Still, this is a work of some originality and interest. One generally finds some things of considerable interest among the smaller works placed round the walls of the lecture-room, nor is this year's exhibition wanting in such, but they are less numerous than usual. Mr. Drury has a beautiful head, "The Spirit of Night," and Mr. Toft's statuette "The Bather," a figure just dropping her mantle off, is graceful, though rather a worn-out *motif*. Mr. Colton's "Love's Bondage" is a group of a mother and infant—his only work; pretty, but hardly up to his usual mark. Mr. Goscombe John has a spirited statuette of a boy in football dress; his other contributions are portrait busts, so that we can hardly say that these two gifted sculptor-members of the Academy are very well represented. Mr. Gillick's bas-relief "Education," for a monument, is well designed; it shows two seated groups, boys and girls, facing each other, making good composition lines, though there is something ludicrous in the contrast between the decorously clothed girls and the group of nude boys. However, one sees the same, no doubt, in Greek sculpture, where the female figures are always completely draped, however nude the men may be. Mr. John's "A Daughter of the People" is a good realistic relief head of a street girl, and Mr. A. J. Leslie's "Dolce far niente" is a fine ideal bust, with the head covering very artistically arranged; this has been bought, and deservedly, out of the Chantry Fund. Mr. Arnold Wright's "Galatea" is another good bust, with fine sculptural character; the marble is left with a rather rough surface texture, which suits well with the bold character of the head.

Some of the smaller works in sculpture have been disposed in the picture galleries. Two which are in Gallery VI.—Mr. Mackennal's sketch for his Gainsborough monument, and Mr. Babb's "Central feature for a small formal garden," have both a semi-architectural character, and in both cases the pedestals are well designed, which cannot always be said of sculptors' pedestals.

The Completion of a Mediæval Scheme.

INSPIRED by the successful appeal for the restoration of the south transept of Selby Abbey, the authorities now contemplate the restoration of the west front and the addition to it of two towers, as was evidently intended by the original builders. The restoration work involves the usual replacing of the decayed stonework, and would complete all the important work of that nature which remains to be done. The addition of the western towers, however, will serve no "useful" purpose, and they are only necessary for architectural effect. Putting on one side the question as to whether the expenditure of the money required in this direction will best serve the work of the church in this twentieth century, the idea seems fruitful of controversy among antiquarians and archæologists. It will be questioned whether it would be wise to alter the appearance of a mediæval building so strikingly, even though that fulfils the intentions of its original

means of defence. Most probably, however, the alteration was deemed to be the best mode of finishing the front, when the very low-pitched roof, which once existed, was put on.

If these two western towers are built, they will not only add to the contrast between the buildings and the commonplace country town in which it stands, but, added to the rebuilt central tower and the restored south transept, will increase the cathedral-like appearance of the Abbey.

The Disfigurement of London.

IT is difficult to refrain from joining in the lamentations evoked by the vicissitudes through which London is passing in the matter of Coronation stands. The metropolis has assumed pretty much of the appearance of a titanic carpenters' workshop—of earlier date, and therefore mercifully minus the machine-made din which would have



Photo: R. Swift.

SELBY ABBEY FROM THE SOUTH-WEST.

This view shows the west front, which it is proposed to complete by the addition of two towers, the rebuilt central tower, and the site of the south transept, now being restored.

designers. Such a comparatively rare event is likely to raise discussion among those whose views range from the extreme conservative idea of restoration, which forbids the introduction of *any* modern stonework, to the methods of, for instance, Viollet-le-Duc, which aim at the restoration of the building to the state in which it reached its highest glory.

The building of the western towers presents no constructive difficulty, the first piers of the nave arcade on each side having been made larger than the others, to support the prospective towers; but, judging by experience of other parts of the building, their foundations will require underpinning, or else settlement will take place.

The upper part of the west front, like the roof of the nave, has seen many changes. At one time the gable was removed and a flat roof formed across the whole front, as a fortified stronghold. According to tradition, this was after the battle of Myton-upon-Swale, so disastrous to many ecclesiastics, when terror of the Scots inspired the making of this inefficient

transmogrified the big city into a roaring and rasping inferno. As it is, quite sufficient noise proceeds from the hand-saw and hammer. The general assault on the ear, however, is insignificant as compared with that which at every turn afflicts the eye. Rough timber is not in itself displeasing to the eye, but it is a sorry substitute for architecture, and that is almost our chief grievance against it. At the very moment when London will contain more foreign visitors than probably it has ever received before, it will appear to them in a casual and an unwonted disguise, its prevailing features trumpery and temporary to nauseation, and its immemorial monuments to such genius in architecture as we can boast hidden behind them. But the gravest consideration is, of course, the very serious danger from fire. The high winds and the hot weather are combining to make those vast acres of timber stacks highly combustible, and the possibilities of irreparable calamity are sufficiently obvious to justify a certain amount of anxiety, if not the full measure of panic alarm which in

some quarters has been affected. The demolition of those stands by an agency less drastic than that of fire will call forth many a deep sigh of genuine relief.

The R.I.B.A. Annual Dinner and the Fishmongers' Hall.

THE annual dinner of the Royal Institute will be held on Tuesday, July 4th, at the Fishmongers' Hall, London Bridge, by the courtesy of the Worshipful Company of Fishmongers. The Fishmongers are world-renowned for their hospitality, and they have a fine hall wherein to dispense it, whether in accommodation or in kind. The Company is one of the oldest, being, we believe, the fourth in order of foundation, the Mercers', Grocers', and Drapers' Companies being apparently of earlier date. The Fishmongers received their first charter from Edward I. in 1272, but the Company was known to be in existence before the reign of Henry II. (1154). What was apparently its first hall was in Thames Street, and was purchased in 1434 from Lord Fanhope. It was destroyed in the fire of 1666, and rebuilt in 1668 (finished June, 1671) from the designs of Jarman, the City Surveyor. The rebuilding of London Bridge in 1831 caused the demolition of the old hall, and the present hall was designed by Mr. H. Roberts, 1831-5. It is not a beautiful building, but is large and imposing, and occupies a commanding site. The rooms are lofty and spacious, and contain many interesting objects. The great hall is rich in wood-carving and armorial bearings, and in one of the rooms is a large chair made of what was reputedly the first pile driven in the construction of old London Bridge, and having for its seat part of the stone on which the pile rested. The wood and stone must have been under the water for more than 650 years. There are, of course, many paintings and sculptures. Among the latter is a statue of Sir William Walworth, by Edward Pierce. Walworth was a member of the Company, and the dagger with which he slew Wat Tyler is preserved by the Company. General Garibaldi was made a freeman of the Company, and the marble bust of him by Signor Spertini has been greatly admired. The Company, large in charity as in hospitality, supports several almshouses—St. Peter's Hospital, rebuilt at Wandsworth 1849-51; the Mark Quested Almshouses at Harrietsham, Kent, founded in 1642; and the much-admired Jesus Hospital at Bray, Berkshire, which was finished in 1628, and inspired Walker's popular picture "The Harbour of Refuge," in which, while a certain amount of artistic licence has been used in the composition, "the old worn red brick, touched by the setting sun," is very faithfully rendered. Views and measured drawings of the fine old almshouses at Bray appear in the current issue of the "Architectural Review." Doggett, the comedian, who, dying in 1721, bequeathed a sum of money for the purchase of a coat and badge to be rowed for every 1st of August, in memory of the accession of George I., was a member of the Company.

A Point in the New Trade Unions Bill.

BUILDERS, employing more organised labour than any other industrial section of the community, are naturally much interested in the Trade Unions (No. 2) Bill that is now before Parliament. Accordingly, we have been favoured with a copy of a memorandum by the Employers' Parliamentary Council, setting forth a point of Clause 3 "which is likely to be overlooked by persons not well acquainted with trade-union law, and upon which the favourable or unfavourable view taken of the Bill must largely depend." To the ordinary reader, it is observed, the effect of the Bill may appear to be no more than this (a) That trade unions are to be invested with the power to spend their funds on political objects, but in return for this power (b) they must allow any member the right of refusing to contribute to political funds. The memorandum then elaborates the

argument that when the restriction as to political activity is entirely removed, "the unions would have the greatest possible interest in putting pressure upon their members to provide funds for that purpose." It is then contended that, since it has been held that a member of a trade-union cannot sue it for benefits, the union could punish him with exclusion for his refusal to contribute to the political fund, and he would have no remedy. It is therefore suggested "that the Home Secretary should be asked whether the rule referred to in Clause 3 of the Trade Unions (No. 2) Bill, by which a member who is exempt from the obligation to contribute to the political fund of a union shall not be excluded from benefits, is intended to alter the existing law which prevents a member of a trade union suing for benefits; and, if so, will he be willing to introduce words in the Committee stage making it clear that Section 4 of the Trade Union Act, 1871, cannot be pleaded against a member who is excluded from benefits on account of his refusal to contribute to the political fund of his union?" It is a fair point; for while it is certainly not necessary to assume that trade-unions as a rule would be so lost to all sense of honour and justice as thus to abuse the power of exclusion, it seems only prudent, in the interests of equity, to make due provision against such a contingency.

The Repair of the Roads.

THE Council of the Roads Improvement Association (Incorporated) has addressed a letter to the local highway authorities in Great Britain on the subject of the repair of roads. Attention is first drawn to the damage and expense incurred by users of vehicles fitted with rubber tyres and others owing to loose metal being left upon the highways, and it is suggested that road surveyors should issue instructions to their steamroller gangs that when a road is being repaired no portion should be scarified and left, or re-coated and left with the stones loose, but that only so much stone should be spread as can be rolled or beaten down before the gang ceases work for the night. In regard to roadside grass margins or verges, it is stated that when the verges are cut and trimmed high scarped kerbs are frequently left which are undoubtedly a source of great danger. To avoid accidents it is suggested that roadmen should be instructed always to slope roadside grass verges towards the channel, so as to avoid leaving a high-scarped edge. This can be done by raking the soil from under the turf and beating it down so as to give the desired slope.

The Recent Action Against an Architect for Dry Rot.

AN echo of the recent action by the Leicester Board of Guardians against Mr. Trollope (Messrs. Giles, Gough and Trollope), the architect of the North Evington Poor Law Infirmary, was heard at the last meeting of the Board, when the clerk read the following letter:—"Dear Sir,—With reference to the recent action brought against me by your Board; the damages and costs in connection with which I have now paid, I think it only fair to say that shortly after the trial, and without any suggestion on my part, the contractors wrote to me that they extremely regretted that the Guardians had not seen their way to make them parties in the case, and thus given them an opportunity of putting their views before the court, that they had no desire to shelter themselves behind our certificates or other legal defences, and desired to submit themselves to the arbitration of the President of the Institute of British Architects (or his nominee) to decide what they ought fairly to do in the matter, irrespective of the question of legal liability on their part. Negotiations followed, in the course of which the contractors have placed before me their version of the facts, and though I cannot acquit them of blame in not obtaining my written authority for the deviation, I am now satisfied that

they acted in good faith under the mistaken belief that the clerk of the works had in fact obtained my previous sanction. Upon looking into the quantities, I find that the total contract price received by the contractors for the concrete floors was about £450, and that the amount saved by the deviation was insignificant. I asked the contractors if they could accept Mr. S. T. Hine, F.R.I.B.A., as arbiter, to which they at once agreed, but it became unnecessary to proceed with the reference, as the contractors and myself have been able to agree as to what was a fair contribution for them to make. In view of the fact that the contractors could not be heard in the recent proceedings, I think it only right that the Board be made acquainted with the above facts.—Yours faithfully, John E. Trollope."

If we remember rightly, this is the architect who was so warmly complimented by the judge on the chivalrous fair-mindedness with which he gave his evidence in court, and by which his whole conduct had been characterised throughout the proceedings. It is pleasing to find that he has now done apparently all that was possible to set the matter in a proper light, and thus to vindicate quite completely the good faith of the builders, whose position in the matter has been throughout that of perfectly honourable men, anxious to have the matter thoroughly threshed out. But the whole question of responsibility for the ravages of dry rot is, as we have often urged, in need of thorough scientific investigation, with the object of relieving architects and builders from what at present is a constant source of anxiety.

Hyde Park Corner.

ON Wednesday last Mr. Buxton asked a question, addressed to the First Commissioner of Works (who was not present, but was represented by Mr. Dudley Ward), as to whether he would consider the re-arrangement of Hyde Park Corner on a more rectangular plan. His chief idea seemed to be to provide, in the area of such a square, suitable positions for memorial statues; but it is a significant fact that the mistake of the irregular laying-out of this space is at length becoming apparent. At the time it was done the lay-out was strongly condemned by the few who knew anything about such a subject. It takes people in England the best part of half a century to find out a mistake of this kind; then they begin to see it and to wonder why it was done. Now that the subject of Hyde Park Corner is once started we shall probably hear more of it; but Mr. Buxton rather spoiled his question by a reference to the plan "which had proved such a success at the Marble Arch." If Hyde Park Corner is to be treated no better than that, it might as well be let alone, and there certainly ought to be some better architectural advice sought than the Office of Works at present affords. It was the Office of Works that originally laid out Hyde Park Corner as we now see it; it was the same department which has carried out the absurd treatment of the Marble Arch; and if Hyde Park Corner is to be remodelled under the present Office of Works, there may be more mistakes. If anything is done, the best architectural advice ought to be obtained and acted on.



THE HALL, "GADSDEN," HAYES, KENT, SWAN AND NORMAN, ARCHITECTS.



"GADSDEN," HAYES: FRONT DOOR FROM HALL. SWAN & NORMAN, ARCHITECTS.

"GADSDEN," HAYES, KENT.

The accompanying illustrations show some interesting work which has been carried out at "Gadsden," Hayes, Kent, for J. Railton, Esq., from designs by Messrs. Swan and Norman, architects, of Clifford's Inn, E.C. The panelling, chimney-piece, and all carving and enrichments are executed in pine, and painted a flat white. The frieze in the hall—covered with plain lining paper—is of a light cream colour. The plaster coraice was in the hall originally, the same design having been used around each side of the new beams. The height of panelling from floor to top of moulded capping is 8 ft., the shelf of the chimney-piece being 6 ft. 9 ins. from floor. The marble surround to the fireplace opening is in Greek cipollino, and that to curb in Verte du Alpes. The dog-crate is a copy of an old design, by Messrs. Gill and Regate, of Oxford Street. Full-size details were supplied for all carving and enrichments, the contractors furnishing models of the same, in wax or clay, which were modified as required. The doors are of 2 in. Spanish mahogany, French polished.

Various other alterations to the house were carried out at the same time as the work shown. The general contractors were Messrs. Smith and Sons, of Bromley Common, Kent; panelling, chimney-piece, doors, etc., by Elliott's Moulding and Joinery Co., Newbury; marble work by Anselm Odling and Sons; and electric lighting by Buchanan, Curwen and Co., London, S.W.

THE LEICESTER GALLERIES.

At the Leicester Galleries there are two exhibitions of small pictures which form rather an odd contrast—water-colour drawings or landscapes by the late Mr. MacWhirter, and oil and water-colour landscapes by Mr. Hughes-Stanton. The general impression produced by the first-named set is that they are too pretty, and by the last-named that they are too heavy and loaded in colour. MacWhirter was no doubt a very charming landscape-painter, though with a little too much repetition in his compositions; his white-stemmed birch-tree in the foreground became almost a kind of signature to his works. Probably the best landscape he ever produced (in which there is no birch-tree) was that Alpine scene, with a mass of flowers in the foreground, which was a centre of attraction in the large room at the Academy a good many years ago. There are many charming sketches in the collection under notice, but the appreciative preface by Archdeacon Sinclair is pitched in too high a key. Mr. Hughes-Stanton is a landscape-painter entirely in the French school (which is one of the best things that can be said of a landscape-painter); his pictures seem built rather than painted, and in his aim at breadth and force he a little loses some of the colour of nature; but at all events he is a landscape-painter with a style and a distinct and unmistakable aim in his art. There are a good many fine small compositions in the collection; and the largest oil-painting, "Flying Clouds, Pas de Calais," is a work with a good deal of grandeur in it.

IN PARLIAMENT.

(By our Press Gallery Representative.)

King Edward Memorial.

In the House of Commons Mr. Douglas Hall asked the Prime Minister whether he would make it a condition to the granting of the Crown land, either in Hyde Park or elsewhere, for a site for the memorial to King Edward VII. that the plans or designs of the proposed memorial should be selected after open competition, and that the greatest possible portion of the work should be British; and that upon the Committee of Selection the Government or the House of Commons should be represented.

Mr. Dudley Ward, who replied, said—This memorial was initiated as the London memorial to his late Majesty, and His Majesty's Government have made no contribution to it. The subscribers have elected a Committee, of which the Lord Mayor is chairman, to make recommendations with regard to the site and the form of memorial. It would be difficult for His Majesty's Government to interfere with the work of the Committee unless or until the Committee bring forward some proposal which may affect the property of the Crown or of His Majesty's Government.

Fires in Film Stores.

Mr. Wedgwood asked the President of the Local Government Board whether his attention had been called to the dangerous fire which occurred recently in a film shop near Charing Cross, and whether any steps would be taken to prevent such shops being placed on the ground floor beneath rooms where people slept or were employed in large numbers.

Mr. Churchill, who replied, promised to communicate with the London County Council in the matter. The Home Office, he added, had more than once suggested that it would be desirable that the Council should obtain power to deal with this danger, and he had no doubt the Council would consider the question of applying to Parliament for the necessary amendment of the London Building Acts. In reply to a further question, he said every precaution possible would be taken to prevent such fires, but further legislation was necessary.

On another occasion Sir William Bull pointed out that three film fires had taken place in the St. Martin's Lane district within twelve months, and that there were at least seven theatres, not to mention the National Portrait Gallery and the National Gallery, within a radius of a few hundred yards. Mr. Churchill referred the hon. member to a statement he had already made. It could not be said, he added, that the National Gallery or the National Portrait Gallery was in danger of fire from existing cinematograph stores.

Building Grants for Irish Schools.

In the discussion in the House of Commons last week, on the vote for national education in Ireland, Mr. Birrell stated that, in respect of building grants in 1910 the Treasury promised to provide £40,000 a year for each of the three years ending March 31, 1913. The total sum would be £240,000. It appeared that £218,676 out of the sum would be expended by March 31 next year, leaving only £21,324 available for the urgent cases waiting to be provided. The Treasury had expressed their willingness to allow the Commissioners to receive further applications for grants up to a maximum of £348,676 from April 1, 1907, including the £240,000 already given. This would be an addition of £108,676.

AMERICAN ARCHITECTURE.

BY FRANK M. ANDREWS.

THE art of architecture in any country finds a twofold source from the architectural tradition and the moral and intellectual character, political organisation, and mode of life of its people. To trace intelligently its development and artistic worth, these broad conditions must be accounted for. The author discussed philosophically, and in considerable detail, the conditions from which the present state of American architecture has been developed.

At Lowest Ebb

Passing over the time of the Civil War, the reconstruction days and the panic of 1873, we find architecture at its lowest ebb concurrently with the renewal of the energetic development of railroads and of other fundamental industries, a consequent rapid increase in accumulated wealth, and of the power of the individual as well as of communities to assert their importance by a material display. The individual respected no architectural authority, save that of his own taste, under the guiding influence of the carpenter-builder. The architect was a negligible quantity, a mere speck in the background; and, in fact, the name had small significance except only when applied to the builder. An architect was a dubious being at best, who insistently expounded impracticable and useless theories about art and other effete things of European origin that were quite inimical to the interests of the local dealers, building trades, and their political henchmen. These were the controlling influences, and this was the day of diluted East Lake and whimsical variations of Victorian Gothic, of jig-saw ornament, and of cast-iron tortured into nightmare semblances that to this day can scarcely be traced to their remote ancestry even by an expert. Under this authority, and with this vernacular, the residential architecture of the time was created, and cities and states so announced their power and importance in their institutions of learning, their capitols, court-houses, etc.

The Movement towards Betterment.

The thin skirmish-line of architects—which stretched across this artistic wilderness from the century of Bulfinch, Hogan, L'Enfant, and others, to the century of Hunt, Root, Richardson, and their contemporaries, men who bravely maintained their loyalty to artistic purity, and devoted pursuit of art under all discouragement—has now broadened into an army of architects and artists, the product of schools of art and architecture both at home and abroad. These men are inspired by exceptional opportunity and an appreciative public. In their numbers, and the power of their collective influence upon the civilisation and development of their country, they exceed that of any similar group of men of a single generation to be found in any recorded period of the world's art of development.

Here, then, we have the interesting example of an art movement rather typically American, wherein the love of the beautiful and the desire of its intelligent expression is not due to the stimulus of the patron towards the artist, but on the contrary has flowed from the artist to the patron, or rather, from an entire group of artists to an awakening public. Democracy, having solved its fundamental problems, now encourages intellectual and artistic growth with a lavish patronage,

that in its aggregate volume and result will some day be viewed with deep interest by the world at large. Even from the standpoint of historical analogy, the forces are at work and the material exists out of which to fashion this result.

The entire material equipment of this country which served its purpose throughout a period of transition and development must be, and is being, re-created in permanent and enduring form, thereby affording an extraordinary volume of architectural opportunity. A practical people, accustomed to quickly grasping and solving broad problems by concerted action, they have realised that beauty and art are vitally important things, and that to be acquired as a national asset their guidance and direction must be assigned to that group of men whose training and experience entitle them to it, and whose active propaganda are but reflected by this conclusion.

The educational influence now at work within us is as wide as the nation itself, proceeding primarily from the group of men referred to, also from schools of art, which are to be found in every important city in the land, from the regularly established schools of architecture in our various colleges and universities, from the active and alert efforts of the lay press, and the intelligent and interesting art-

criticism and discussion of the popular magazines and the technical journals of the profession.

The Scheme of Education

In this scheme of education Europe may be regarded as our great laboratory, in which the practical application of the theories and influence of this educational movement are tested and applied. The thousands of Americans who, year by year, cross the Atlantic and travel about Europe have, regardless of their immediate motive, both consciously and unconsciously, absorbed the spirit, the grandeur and nobility of its artistic achievements, and have at last perceived that, besides the material wealth of a country, there must be a spiritual and intellectual wealth which art alone can express, and without which no nation can be truly great nor the full fruition of a people's destiny be accomplished. The author believes that these influences have resulted in a public sense of discrimination and a sound professional analysis of the art and artistic influence of Europe, and from this he deduces that there will ultimately appear in America a characteristic American style that will be grounded upon the varieties of architecture, sincerely expressing the organism, use, and purposes of the structures, yet not insisting upon the forced and unnatural adaptation of motifs and detail in archaeological reproduction of other styles not suited to the people. The day has passed in that country when the ideas and so-called originality of the individual were to be tolerated as worthy



"GADSEN," HAYES: DETAIL OF DRAWING-ROOM.

SWAN AND NORMAN, ARCHITECTS.

*Extract from a paper read before the Royal Society of Arts, May 24th.

substitutes for the time-honoured forms and concrete conclusions which represent the cumulative authority of the many minds of the past striving for truth and beauty of expression.

An Epoch-making Exhibition.

Undoubtedly the greatest, if not the primary, stimulus of the present artistic development of the United States is to be found in the Columbian Exposition of 1893 in Chicago. It was here that the profession for the first time found itself in possession of a theme monumental in its scope and dignity, and of that peculiar quality and complexity which put it beyond the capacity of the layman or of the builder to control; resulting, therefore, in its assignment to a profession now become powerful enough to assert its right to assume direction within its own domain. The initial moment in our art history that required the united action of a group of properly trained men, it was the first time when they had to deal with a problem in which architecture was the dominant note; recognised as the visible and vitally important expression of the dignity and scope of the enterprise. The interest of a great public was to be aroused, and a situation of charm and beauty was to be created as a functional part of the display itself, and for this purpose the business men in charge perceived that good architecture was indeed a practical necessity. For the first time the ability of architects accustomed only to separate individual effort was to be gathered together, synchronised, and welded into unified action, wherein the individual tendency must be subordinated to the requirements of all while dealing with a grandiose plan, the grouping of buildings in harmony of mass and outline conforming to a central governing ideal.

For the first time on American soil there was to be produced in orderly triumph the majestic splendour of ancient Rome, of Italy, of the dreams of France, and these architects, recruited from the field of conventional daily routine, thus found in their grasp the opportunity to display the possibilities and meaning of the art of architecture.

To-day it is a thing of the past, ephemeral in its material existence, but everlasting in its message and impression upon the nation. With difficulty can you, to whom the traditions of your own land and the storied riches of Europe are familiar things, realise the revelation contained in this work of art, and its stimulus to our people. Its direct influence is manifest in every important city of our land, by local agitation for civic beauty, by established and projected control and direction of the art expression of individual enterprises, by the popular demand for the beautifying of streets, the monumental groupings of public buildings, and the constantly increasing intelligence of popular architectural criticism. A hitherto unknown language to the masses, this enterprise aroused in them a spirit of inquiry and appreciation, that with one great sweep of thought elevated the profession of the artist and architect into a plane of equality with all of the utilitarian pursuits of a practical money-getting age. For the first time the profession found itself a firmly established part of the general scheme of things, a factor of public interest, upon which rested the responsibility of interpreting the intellectual and material growth of a community while subjected to intelligent scrutiny and analysis of its work, and in a position to deal successfully with the influence of ig-

norant Philistinism. These people of practical and materialistic habit of thought responded promptly to the realisation that here indeed was a new field of development, that paid big dividends in its effect upon the physical and moral welfare of both the present and future generations.

The Experimental Stage.

In the buildings erected during the past twenty-five years, we have run the gamut of practically all known architectural thought—have experimented with about everything this side of the Indian wigwam.

The incredibly rapid growth of our cities, increase of population, the demand for a new equipment of buildings of every variety of use and purpose, the razing of existing buildings, products perhaps of a previous decade, but become obsolete and in the way of imperative necessities, constituted a movement of such overwhelming volume, to be accomplished in such a short space of time, as to crowd upon the shoulders of one generation of architects—who virtually at the same time were re-creating themselves—a variety and volume of new problems, complicated in their every practical aspect, and presenting an entirely new artistic field of attack, that perhaps would not have been an easy task for three generations of men well entrenched amidst familiar traditions.

Again, the entire absence of suitable precedent or style, and the presence of a prevailing and entirely new form of construction having no European prototype, obviously presented a free range for the exercise of individual fancy, resulting oftentimes in incongruity and an inharmonious eccentricity and lack of restraint. Owing to the ever-increasing height and the form of our buildings, new problems in the scale and application of detail were presented, which resulted in many architectural catastrophes, but are now better understood.

Due to all of these conditions the successful architect found himself burdened with an extraordinary and varied assortment of buildings difficult to deal with at one and the same time, with the demon of American rush-methods relentlessly pursuing him.

Richardsonian Romanesque.

It is the author's personal belief that this has had much to do with the exploitation of certain historical styles by several of our notable architects; to the extent that their names have become synonymous with those styles, as for example Richardson with the French Romanesque. It is an undertaking that requires no small amount of executive ability and a highly organised office to manage this condition successfully, and whatever tends to standardise and unify its efficiency must perforce be found and used.

Richardson, with his masterly knowledge of the style, was quite justified in his adherence to the Romanesque. It was not too violent a departure from the prevailing mode, was easily managed by the building trades, and suitable to the then existing range of available building material. How clearly he perceived this is proven not only by his own work and that of his immediate successors, who were trained under him, but also by the complete collapse of the movement he established when it fell into the hands of the horde of imitators who neither saw nor appreciated the importance of this fact, and who, in attempting novelties of treatment without proper means at hand, helped it to an early death.

White and McKim Renaissance.

Our next important architectural revelation fared more fortunately by proving itself much more adaptable to our wants, and, dealing with an almost infinite variety of refined flexible forms easily applied, became the reigning fashion for an extended period, and is to-day reasserting itself in a salutary and refreshing way. This revelation came through the work of White and of McKim, who did not at first display a full mastery of the style, but temporised with a curiously interesting architecture of brick and reserved application of Italian detail. They soon became the leading exponents of the Italian Renaissance, and since their output of residential, commercial, and other classes of work, was enormous, its educational influence with us must be counted of prime importance; and by their own good taste, fine sense of proportion, and full appreciation of the refinements of the style, they elevated our standards to a plane that will not be abandoned. In their extensive use of the Georgian period they reminded us of our own best tradition, showed us the value of simplicity, control of expression, and respect for architectural law and order. Office expediency is to me apparent in much of their work, particularly in their bold confiscation of entire architectural compositions, as for example, in the Tower of Madison Square Garden.

Potency of French Influence.

With us the first important exponent of the modern French school of thought and design was Richard Hunt, and his work was of such volume, his clientèle so important, as to place him as one of the factors that shaped our tendencies. His earlier work adhered closely to contemporaneous French Renaissance, but later his frequent and facile application of the style of Francis I. to noteworthy structures produced a widespread interest in style. His high place is accorded him, not only because of the importance and quality of his work, but also for his sturdy maintenance of the best traditions of the French school, which now has become so important to us.

These men were great artists whose inspiration given to the young men of their day, now become the active men of this day, and to the whole trend of architectural thought in the official, governmental, and private life of our country, cannot be overestimated.

It is important that I refer to the aims, influence, and results of the system of architectural education prevailing in our colleges at home and of the foreign schools, notably that of France—the Beaux-Arts. Our courses are largely influenced by the Beaux-Arts system of instruction, and the theory of architectural training as formulated by it. Better than any other, it seems to us to concern itself with the broad principles of architecture, of the laws of composition, mass and proportion, the proper use of ornament, and emphasises the comprehensive grasp of problem of a nature comparable to our own. Furthermore, it has evolved a technical method of expressing these things so intelligibly that it is peculiarly suitable to the student, first grounding him in principles and then developing in him the power to individualise his interpretation of them. It is this insistency upon principles, and freedom from exploitation of any particular style or fad, and the resulting flexibility, which popularises this school of training with us. The general result of this organised system of education is already apparent, and will, in our succeeding architectural generation, mark



THE MAURITSHUIS, OR PICTURE GALLERY, THE HAGUE, HOLLAND.

This building was designed by Petr. I ost, who died in 1665. He is best known in Holland by his designs for several of the largest country houses and mansions, besides public buildings. The Mauritshuis, or picture gallery, is built of sandstone and brick, and is situated on the Hofrijver, around which nearly all the Government buildings are placed.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

the greatest forward step in the right direction that we have yet known. Already the sobering influence of logical thought based upon this training in principles is visibly impressing itself upon our buildings to our infinite betterment, and revealing a firmness of touch and a sure handling of design. There is forming a unanimity of trend of thought that is replacing the scattered individual assertiveness of style that was characteristic of former days, which presages a typical American mode that will continue and prevail as a foundation for consistent development. I believe that the English influence and traditions will be always more in evidence in our expression of domestic architecture, because our habits of living are modelled upon the English customs, with particular reference to country life. Our public buildings, and our disposition of the larger civic architectural problem, will undoubtedly exhibit more decidedly than ever the French influence and system.

COMPETITIONS.

The "Ideal" Cottage.

Next April there is to be another "Daily Mail" Ideal Home Exhibition at Olympia, when the chief feature will again be an "ideal" cottage to cost £900 to £1,100. £100 will be offered for the best design, the selection being made by Mr. E. C. Monson, F.R.I.B.A., Mr. Edwin J. Sadgrove, F.R.I.B.A., and Mr. W. G. Tarrant, of Pyrford, builder, assisted by two ladies—Mrs. F. C. Stoop and Mrs. Geoffrey Lubbock. Mr. Tarrant will subsequently undertake the erection of the prize-winning house at Olympia. In addition to the prize of £100 the selected architect will be paid the usual fees for supervising the erection of the house at Olympia. The closing date for entering designs is July 31st. Further particulars can be had on application to the Secretary, Ideal Home Exhibition, Carmelite House,

Travelling Studentship in Decorative Painting.

The Incorporated Institute of British Decorators are offering a travelling studentship of £50 for the encouragement of the study of decorative painting. The studentship is open to competition by students between the ages of twenty-one and thirty in any recognised school of art or other institution devoted to the study of applied art in any form, and situate within the limits of the United Kingdom. Particulars may be obtained from the Secretary, Mr. Fredk. W. Englefield, Painters' Hall, Little Trinity Lane, E.C.

LIST OF COMPETITIONS OPEN.

JUNE 1. INFIRMARY, BRADFORD.—Competitive designs and estimates for new infirmary, Duckworth Lane. Address, Board of Management, Bradford Royal Infirmary.

JUNE 10. SEWERAGE SCHEME, ASPATRIA.—Cumberland U.D.C. invite plans for a scheme of sewerage and sewage disposal. Plans and estimates by June 10, to F. Richardson, Aspatria, Cumberland.

JUNE 16. BUSINESS PREMISES CYMMER.—The Cymmer Co-operative Society, Ltd., are prepared to receive competition designs for the rebuilding of their business premises at Cymmer, Port Talbot, Glamorgan. £15 and £5 will be awarded to plans first and second in order of merit respectively. Block plan, sections, and

conditions may be obtained on payment of 5s. (returnable on receipt of bona-fide plans), from the Secretary, Co-operative Society, Cymmer, Port Talbot. Plans must be received not later than June 16th.

JULY 1. CHAPEL AND SCHOOLROOMS, SWANSEA.—Competitive designs are invited for a chapel, schoolrooms, and class-rooms at the junction of St. Alban's Road and Finbury Terrace, Swansea.—Particulars from D. Walters, 19, Brooklands Terrace, Swansea.

JULY 7. SECONDARY SCHOOL FOR GIRLS, NORTHAMPTON.—The Northampton Boro' Education Committee invite architects practising in the borough or county of Northampton to submit, on the 7th of July next, plans for a secondary school for girls, to be erected in St. George's Avenue, Northampton. Particulars from Stewart Beattie, secretary, Education Offices, 4, St. Giles Street, Northampton.

JULY 31. PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND.—Premiums, £1,000, £500, £300, and £200. Particulars, Minister of Public Works, Wellington, New Zealand.

JULY 31. DESIGN FOR AN IDEAL COUNTRY HOUSE.—The "Daily Mail" offers a prize of £100 for a design for a country house to cost £900 to £1,100. Architectural assessors, Mr. E. C. T. Monson, F.R.I.B.A., M.S.A., and Mr. Edwin J. Sadgrove, F.R.I.B.A., M.S.A. Particulars from Carmelite House, E.C.

NEWS ITEMS.

Architectural Copyright.

An action has been begun in the Paris courts in which an architect claims damages from another architect for having erected an edifice at Royan which is a replica of the Casino he has designed for the town of Gourmalon.

Church of the Ascension, Twerton, Bath.

This church has now been completed by the addition of the new chancel, transepts, vestries, and classrooms. The architect was Mr. F. Bligh Bond, F.R.I.B.A., of Bristol, and the builder Mr. F. J. Blackmore, of Twerton.

New Chantry Purchase.

The Chantry Trustees have decided to purchase Mr. W. Reynolds-Stephens's bronze group "A Royal Game," now on view at the Royal Academy. The catalogue price of the work is £4,000.

Mr. Ernest Crofts's Estate.

Mr. Ernest Crofts, R.A., the Keeper of the Royal Academy and the well-known painter of military subjects, who died on March 19th, aged 63 years, left estate of the gross value of £3,736, with net personalty £2,678.

Sale of "Dawpool."

The fine residence, "Dawpool," Thurston, built for the late Mr. Ismay, of the White Star Line, from the designs of Mr. Norman Shaw, has changed hands again. After Mr. Ismay's death Sir Herbert Roberts, Bart., M.P., purchased this property, but did not take up residence there. Messrs. Boulton, Son, and Maples, estate agents, of Liverpool, have just concluded the sale of the residence and thirty acres of land immediately adjoining, the purchaser being Mr. F. W. P. Rutter, the general manager of the London and Lancashire Assurance Company.

A History of London Architecture.

A popular volume describing and illustrating the historical buildings of London will be published shortly by Mr. B. T. Batsford. It has been written by Mr. Walter H. Godfrey, an architect whose work in connection with the London Survey Committee is known to many, especially through his contributions to the "Architectural Review." The volume will contain maps and a descriptive guide to the buildings, and will be issued at 7s. 6d. nett. Mr. Philip Norman has written a preface to it.

New Hospital for Malvern.

By the generosity of Mr. C. W. Dyson Perrins, a well-equipped up-to-date hospital has been erected in Lansdowne Crescent, near Great Malvern Railway Station. Having regard to the increasing difficulty such institutions experience in securing necessary funds for annual upkeep, the accommodation has been limited to twenty-four patients' beds, an operating and an out-patients' department on the ground floor, with kitchen, dining and sitting-rooms for matron and staff below and bedrooms above. There are separate large wards for men, women, and children respectively, as well as single-bed wards. A special feature is the provision of balconies opening from each large ward, which it is hoped may be fully utilised for patients likely to benefit by outdoor treatment. Mr. William Henman, F.R.I.B.A., was the architect.

Hereford Castle.

The Corporation of Hertford having asked Lord Salisbury if he is willing to sell Hertford Castle and its grounds for the public use of the inhabitants, his lordship has replied that he will not sell the property on any consideration, but that he is quite willing to let it to the Corporation on a long lease at the nominal rental of half-a-crown a year. The Corporation have held a special meeting, and Lord Salisbury's offer was gratefully accepted. The Castle property, which is in the centre of the town, has been in the possession of the Cecil family for about 300 years. The present building is comparatively modern, but there are some interesting remains of the ancient Castle. The grounds are about 5½ acres in extent, and through them runs the River Lea. Until recently His Majesty's Judges used to stay at the Castle during their visit to the town for the Assizes; but the property is at present let to an American.

New Waterworks in Japan.

A sum of about £1,000,000 has been voted by the municipality of Kobe for the extension of the waterworks. The supply is to be taken from the Muko River, about 22 miles north-east of Kobe. Two reservoirs will be constructed on this river, at distances of 19 miles and 17 miles from the city, whence the water will be delivered to filter beds to the east of Kobe by means of tunnels and pipe lines. It is expected that the work will occupy 12 years, and that when it is completed a daily supply of 5 cu. ft. per head will be available. Extensions which will cost about a similar amount are also to be carried out for Osaka. In this case the supply will be taken from the river Yodo. The new works will be situate on the right bank of that river, and will include two intake towers 22ft. 6in. high, 14 filter beds, and four service reservoirs. The extensions will necessitate the installation of several pumps, boilers, etc., and it is expected that they will be completed in 1914, when a daily supply of 5½ cu. ft. per head will be available.

THE ARCHITECT IN INDIA.

BY J. BEGG, F.R.I.B.A., CONSULTING ARCHITECT TO THE GOVERNMENT OF INDIA.

IN the course of a lecture delivered recently at Caxton Hall, the author confessed to a strong temptation to deal with his subject archæologically, since the old work in the country is so much more fascinating than the new; but during his ten years of service in India he had no time to spare for travelling beyond the range of his actual duties. He would therefore confine himself to a consideration of the position of the present-day architect in India.

The design and construction of the buildings of modern India is, for the most part, in the hands of the Indian Public Works Department—a service offered by men specially selected and specially trained—or till lately specially trained—for their work. By “specially trained,” however, the author did not mean to imply that they had been trained as specialists. Quite the contrary. Their work has certainly ranged over a wide field, a field embracing many kinds of specialism, such as railway work, irrigation, architects’ work, etc.; but the men themselves have not been largely encouraged to specialise, but rather to acquire a general training in the practical and theoretical considerations bearing on the varied work they are called on to take charge of. Though they enjoy the generic title of “engineer,” it does not follow that that title is the best or most accurately descriptive one for them, or that it would convey other than a vague idea of what they really are to anyone unacquainted with Indian conditions. While some of them have been drawn from the Royal Engineers, some from the ranks of the civil engineering profession, and some few, like “Topsy,” have “just growned,” the majority owe their training to the special colleges, principally to the late Indian Engineering College at Cooper’s Hill. But for the typical Public Works Officer the term “engineer” afforded quite an arbitrary and by no means accurate definition. He was not—he is not—an engineer quite as the term is understood in England or in Europe generally, and he has merely been called so because his most direct professional progenitor was perhaps the Royal Engineer. He might have been called “master of works,” or he might have been called “architect,” and it is certainly probable that, had it been expedient to recruit him from the ranks of any one existing orthodox profession in Britain, the particular blend of engineer, architect, administrator, and honourable gentleman necessary for the conditions of his life and work would have been more readily found among the members of the profession of the British architect than of any other ready to hand. It is the architect that is really the all-round man, while the engineer is the specialist—the man who has specialised on what is essentially and *ab origine* a branch of architecture, namely, *construction*. Also because the architect’s training teaches him to go by something beyond mere figures and formularies. It involves the cultivation of what might be called a *sense*, and is, therefore, calculated to make him adaptable and to aid him particularly in new and strange conditions.

Times have changed and work conditions have progressed in India. The generally trained “engineer” is still, as

he must needs be, in a numerical majority, and is concerned with the vast mass of work involved by repairs, maintenance and other petty works, by road making, bridge building, and general works administration, but with little of original or creative work to do which is not building work, and, as such, directly within the sphere and competence of the architect. Cooper’s Hill College is no more, and all its splendid machinery for the training of the Indian Public Works officer has been scattered to the four winds; retaining the arbitrarily acquired name of “engineer,” recruits to the Public Works Department are being poured into the country from among the younger members of the civil engineering profession in Britain, to the all but total neglect of the architect’s profession; and a situation has arisen which can hardly be regarded by the architect with a large amount of equanimity.

There is a temptation to exaggerate the gravity of the situation, and it would be easy for the architect to do so. But, said the author, I want to be quite fair in my statement of the case. I do not want to pretend that the architecture of the Public Works Department has been contemptible. It has not been so. On the whole, India may well challenge any country in the world to show an equal number of amateur buildings more or less free from glaring architectural solecisms, more nearly approaching the standards of the professional designer. So much for the past. Nor must we be too pessimistic as to the present and the future. In 1902 the Secretary of State, moved by the then Viceroy (Lord Curzon), created the post of “Consulting Architect to the Government of India,” and appointed as its first incumbent a trained architect in the person of Mr. James Ransome. That was a great step, and the idea prompting it was a great idea for architecture. But it was not a new idea entirely, for the Government of Bombay had at that time an architect in their employ in the person of myself. When I first went to India, at the beginning of 1901, I was, I believe, the only architect-trained architect in Government employ in India. There are now seven of us, and soon there may be eight. The time can, I think, hardly be long delayed before every province and administration of any importance in India has its architect with his properly equipped staff. But even then it will be no more than a step which has been taken in the right direction. This handful of men can do no more than touch the fringe of the vast mantle of bricks and mortar which the continent of India requires continually to be weaving to veil her growing sense of nakedness. At best they can do no more than design a comparatively small number of the more important buildings which every year must rise up in response to the increasing needs of the country. And these they can merely “design,” as it is called, leaving the equally, if not more important, branch of the architect’s work—the building—in other hands. “Design,” as it is called. I say, for no man can design properly who is not in constant practice at actual building work. Similarly, no one can properly build who is not an expert designer.

May I now allude to some of the difficulties which this new breed of architects have to face in India? Chief amongst these is, perhaps, the prevailing misconception as to what an architect is and does. It may astonish architects to hear that, when I first went to India ten years ago, I found it to be universally held that the architects had nothing to do with the *erection* of buildings. The man who saw to that was the engineer! Materials, strains and stresses, thickness of walls, strength of piers, beams, girders, and trusses, contracts and work arrangements of all kinds, together with the prices that should be paid for labour and materials—these were all beyond the architect’s province. Further, for matters such as the number, size and arrangement of rooms, their lighting, whether by windows or artificially, their ventilation, etc.—in fact, the planning and entire conception of the building, here the engineer was held to be the proper authority, and for none of these things was it considered fitting that the help of an architect should be obtained. People would not believe me when I told them that all such things were the commonplace of the architect’s daily work in England, and, in fact, everywhere else but in India. Even such things as decoration and the colour of the paint to be used, whether internally or externally, were supposed to be quite beyond the province of the architect. The engineer was apparently the man to settle all that, and he frequently left it to his subordinate, who left it to the painter, who, in turn, might save the situation by consulting the wishes of the prospective occupant of the building! Such a state of topsyturvydom had to be experienced to be believed.

What then, it may well be asked, was the architect supposed to do? Upon my word, I do not know. I believe that a few of the more enlightened considered he was concerned with the exterior appearance of the building—the appearance, that is, so far as the mere form of decorative details went—for colour, whether applied as paint or by the choice of materials, was certainly denied as being within his competence. I was thought to be seeking unduly to magnify the importance of my functions when I either sought to do otherwise than confine myself to the narrow limits of exterior appearance or represented the architects of other countries as doing otherwise in the ordinary course of their duties.

The architect in private practice in India has an easy way of meeting this ludicrous misconception of his functions. He simply inscribes his brass plate with the words “Architect and Engineer.” But the official architect has no voice in the choice of his designation, and must accept that, with his work, as each comes from his official superiors. And there has been no lack of work for us. I suppose they must have found us useful. I can point to one curious instance of some years ago. A Government architect was ordered to prepare the detailed designs for a large and important bridge, involving alternative treatments in stone, steel, and reinforced concrete, though it was admitted that this at least, was certainly not within the officially recognized category of his duties. All the while the engineer to whom the duty would naturally have fallen was engaged on the design of a big block of residential flats. The architect did suggest that perhaps an exchange of work might be effected, but this was met with the coldness such presumption deserved. Yes, they must have found us useful—more useful, I think, beyond our acknow-

ledged province than within it. I am glad to say that much of the misconception has been lived down. Before I left Bombay in 1906 to take up my present appointment with the Government of India, the Government of Bombay had sanctioned the establishment, in my office, of an executive branch and the entrusting to me of the construction of all the more important buildings designed in the office. Generally speaking, the architect is becoming more and more freely admitted to the councils of the Public Works Hierarchy on an increasing number of matters connected with his calling.

Then there are the difficulties an architect finds in getting his details, specifications, and other instructions understood on the works. Neither the workman nor the Public Works subordinate has been sufficiently trained in what is known as the "reading" of drawings, and the engineer is not able to afford the time to explain things.

But a more formidable trouble is the absence of any reliable source for the supply of capable assistants. In Europe, especially in the towns, there is no lack of these, and they can be got to work for surprisingly low wages—even for love—for the sake of experience. The Indian Public Works Department is able, by virtue of its long establishment and the considerable figure it makes in the public eye, as well as from the fact of the existence of several engineering colleges, to obtain an adequate supply of subordinates sufficiently trained for its ordinary requirements. But the architect's requirements are of a very different nature. The ordinary Public Works subordinate is of little or no use to him. Moreover, he requires the assistance of men of a different class than can be made to pass muster under the more perfunctory and routine character of the ordinary Public Works Department work. It therefore follows that the architect, when he goes to India, has very considerably to modify his methods if he is to get through his day's work at all; and it also follows, alas! that he cannot turn out his work with the same amount of completeness and thoughtful care as at home. This circumstance militates grievously against his success, for so much less skilled are all through whom his ideas and instructions have to be transmitted to the workmen—his own immediate staff, as well as the overseeing machinery of the "executive engineer"—and so much less skilled are the workmen themselves as compared to those he has become accustomed to at home, that to obtain equal results he ought to employ superior rather than inferior methods, to give fuller rather than more scanty instructions and details.

Towards the diminution of this difficulty various schemes are under consideration. There is the proposed establishment of a thorough system of pupilage in the existing architects' offices. There is the suggested sending home of approved architectural pupils to complete their studies in Europe. The Bombay School of Art is doing good work with training classes for architects' assistants, and other schools in the country may perhaps be induced to follow. But all the schemes bristle with difficulties, the chief of which arises from the fact that the better class of Indian youth does not often seek to follow architecture as a profession, either because his order of mind is not "built that way" or because his attention has not yet been sufficiently turned to the profession. Your young educated Indian of good class seeks to become a lawyer or a doctor, or a few aim at being engineers, though I must

say they have hardly yet shown that, as a race, they possess outstanding aptitude for the later calling. But the few who have essayed to become architects have not hitherto been generally of a class or of an education to fit them to take the necessary training.

It would be a great thing for India if she could be put in the way of having a strong, living architectural profession of her own, and of being more or less self-contained in the matter of providing its personnel. Her arts are dead or nearly so, and her crafts are little better. The Indian workman has become a complete master of one art only—that of scamping—and it is a rare thing to find one who takes a real pleasure in his work for its own sake, or for any other sake than that of the expected pecuniary reward. The taint of commercialism, at its crudest, poisons his whole outlook, without, as yet, the virtue that should accompany it—commercial honour. It is architecture which is the great mother of all the arts and crafts, and it is the architect alone who, as the lineal descendant of Tubal Cain, can, I believe, inspire the craftsman with that pride in his work which is the sure antidote to a too exclusively commercial outlook. I know from more than one happy experience that the Indian workman can be so inspired; and I believe that if there were only more of us, and if we were of the right sort—the sort to bring with us enthusiasm for our work—then the crowds of Chinese carpenters and smiths, for instance, who have obtained a practical monopoly of their respective trades in Calcutta and elsewhere, would soon have to pack and go.

And think of the civilising effect which it would have on the country if we could only get the crafts set on a proper footing. The very foundation of a modern nation's progress in civilization is surely work—sound, honest, joyful work. I cannot see that that foundation has yet been laid in India, or that such of it as was laid by the Moguls centuries ago is being used sufficiently to support the structure we are labouring to rear. Looked at from this point of view, it seems to me that in the progress of the architectural profession in India we might have a big thing, and in the architect's mission a big mission.

Just as the India of the past can show some of the world's greatest architectural achievements, so we may rest assured that in the present and future she has the main essentials for holding her own with other nations in this respect. She has a wealth of fine building materials in her various grades of basalts, freestones, marbles, and granites; slate, tiles, bricks, and lime. She has a certain amount of indigenous timber, and a ready access to the teaks of Burmah and the gums and other timbers of Australia. Then her climatic conditions and ways of life demand large and lofty rooms, and that all goes to make for a broad, big, and masculine type of building design, in which dignity and grandeur of manner are encouraged by the formality and ceremoniousness that are associated with her traditions in the conduct of government and public affairs generally. Moreover, in the larger aspect of architecture—that concerned with the planning of towns and cities—there is endless opportunity, nay, even crying need, for the architect's best efforts. That is a lesson which has been learned within the last ten or twelve years during the operations of the Bombay Improvement Trust. Calcutta is now starting an Improvement Trust of her own. May we hope that that city will be so wise

as to profit by Bombay's experience in this respect.

I would ask you to bear in mind the enormous disabilities under which, as I have pointed out, the work of the architect in India is carried on, and would plead for a correspondingly sympathetic and lenient judgment of results. But, at the same time, I do not pretend to a very real optimism with regard to the future, from the point of view which also I have tried to indicate to you. While disclaiming the desire to pose as prophet, I think I may at least ask those of you who are interested in architecture generally, and in Indian architecture in particular, to keep a sympathetic eye on the work of the Public Works Department, and I declare my confidence that the progress you see will not disappoint you. Do not look for any startlingly individual development of a "style," as the term is popularly understood, for the individual character of a real living style can never be judged by the generation that produces it. But look for buildings designed alike with honesty, with thought, and with common-sense, as with the quality of "style" in the bigger sense. Look for those buildings showing the qualities of sound, honest workmanship, and inquire whether there are still in Calcutta as many Chinese carpenters as ever.

THE A.A. PLAY.

Last week the annual play of the Architectural Association was performed for four nights at the R.I.B.A. premises in Conduit Street, W. It was entitled "Putting the best face upon it," with a prologue. From the latter we gleaned that on the present occasion a new play was not forthcoming, so we had instead the revival of an old one. But for the crumb of information it afforded, the prologue might have been dispensed with, as it was a wearisome business. The play itself, however, went off merrily enough, with many familiar figures among the dramatis personæ—Mr. Carvill, Mr. Wontner Smith, Mr. Clapham, in particular; while no one contributed more to the entertainment than Mr. J. B. Scott, who presented the curiosity of a Roman clerk of works with a Scotch accent! The music was composed by Mr. Claude Kelly and the orchestra—tribute to the versatility of A.A. members—was under the direction of Mr. Harold Lock.

OUR PLATE.

Marble and Mosaic Work at Westminster Cathedral.

The two illustrations of marble and mosaic work at Westminster Cathedral which form the subjects of the plate in this issue may be regarded as typical of the character of the decoration which is being carried out in Bentley's great building. With so much remaining unfinished, no sort of general idea of the total effect can be gained, but the rich mellowness of the colour scheme adopted in those side chapels which have been completed leads one to imagine that the interior, when finished—years hence—will be truly magnificent.

R.I.B.A. Annual Dinner.

The annual dinner of the Royal Institute will be held on July 4th at the Fishmongers' Hall, Adelaide Place, London Bridge, E.C. The price of tickets is 25s. for members and licentiates and their guests; ladies' tickets, 21s.

ENQUIRIES ANSWERED.

Designing Retaining Wall for Water.

J. P. (DUBLIN) writes: "What should be the shape and thickness at the base of a masonry or concrete wall (about 140 lbs. per cubic ft.) to resist a maximum head of 48ft. of water? The wall is to be one face of a dry valve tower, the remaining sides being in rock from a depth of 18ft. below top water level, the wall in question going down into the eduction cutting. It is desired to keep the inside of all walls vertical, thus reversing the usual conditions governing the design of masonry dams. The tower is to be lined with 27ins. brickwork, and the plan of inside space is a square of twelve foot side. The wall must receive some stability from the two side walls, which should act as buttresses. Assuming a base thickness of 15ft., and considering a part of the wall 1ft. in height as a beam 12ft. span, free at ends, uniformly loaded, and 15ft. deep (at 48ft. level), a tension of approximately 1,500lbs. per sq. ft. is developed, which seems excessive for masonry; and a greater thickness at base seems excessive for a twelve ft. wall length. Even a thickness of 17ft. 6ins. would be in tension to the amount of 1,050lbs. per sq. foot. Therefore, I should be glad to know: (1) What should be the thickness at base and leading dimensions? (2) Would it be advisable to employ the arch shape 1in. plan in front wall alone, and if so, what should be the thickness of arch? (3) If a completely circular shape were substituted for the proposed rectangular form of tower, what should be the thickness of a masonry or concrete tower lined with, say, 14in. or 22½in. brickwork for a maximum head of 48ft.?"

—If the wall be looked upon as a series of horizontal beams, the tendency would be for an overstrain to produce vertical cracks in the outer face through tension. The permissible tensile stress would be, for concrete or rubble masonry set in cement, not more than 50lbs. per sq. in., or, say, 3 tons per sq. ft. The load would act upon a length of 12ft., but the span would be the clear width on outside, say, 26.5ft. Let w = load in tons per foot run on any horizontal division, b = depth of division, l = span in feet, z = length in ft. occupied by load, h = vertical depth from surface to centre of the division, M = maximum bending moment on the division in ton-ft. Then

$$w = \frac{62.5hb}{2240}$$

and

$$M = \left(\frac{1}{4} wzl \right) - \left(\frac{1}{8} wz^2 \right) = \frac{1}{4} \times .893 \times 12$$

Now divide the whole depth into portions of 8, 10, 10, 10 and 10 ft. and taking the first division 8 ft. deep,

$$w = \frac{62.5hb}{2240} = \frac{62.5 \times 4 \times 8}{2240} = .893,$$

and

$$M = \left(\frac{1}{4} wzl \right) - \left(\frac{1}{8} wz^2 \right) = \frac{1}{4} \times .893 \times 12$$

$\times 26.5 - \frac{1}{8} \times .893 \times 12^2 = 71 - 16 = 55$ ton-ft.

As a rectangular beam (taking the mean thickness for depth), the moment of resistance R will be ZC ,

$$Z = \text{section modulus} = \frac{1}{6} bd^2, \text{ and } C = 3.$$

Assume one fourth of the stress to be taken up by this method and the remainder by the gravity method. Then we have

$$M = R, \text{ or } \frac{55}{4} = \frac{1}{6} \times 8 \times d^2 \times 3$$

whence

$$d = \sqrt{\frac{55 \times 6}{4 \times 8 \times 3}} = \sqrt{3.44} = \text{say } 2 \text{ ft.}$$

for mean thickness, or say 1ft. 6in. at top and 2ft. 6in. at bottom of section. Now consider this section by the gravity method for the remaining ninth-tenths of the load. The thrust per foot run at one-third of the height will be

$$\frac{\times 62.5 \times 8^2}{2240} \times \frac{3}{4} = 0.67 \text{ ton.}$$

The weight of the wall will be

$$2 \times 8 \times \frac{140}{2240} = 1 \text{ ton,}$$

and the centre of gravity line will be

$$\frac{2}{3} \times 2.5 - \frac{1.5^2}{3(1.5 + 2.5)} = 1.48 \text{ ft.}$$

from outer face at bottom of section. Then the resultant will cut the base at

$$\frac{.67 \times 8}{1 \times 3} - 1.481 = 0.3 \text{ ft.}$$

outside face of wall with a leverage of

$$\frac{2.5}{2} + 0.3 = 1.55 \text{ ft.}$$

The maximum stresses produced will be

$$\frac{W}{A} + \frac{M}{Z} = \frac{1}{2.5} + \frac{1.0 \times 1.55}{\frac{1}{8} \times 1 \times 2.5^2} = 4 + 1.5 =$$

1.9 tons per sq. ft. compression and 1.1 tons per sq. ft. tension, which are well within safe limits. Taking the next stage to 10 ft. in the same way

$$w = \frac{62.5hb}{2240} = \frac{62.5 \times 13 \times 10}{2240} = 3.62,$$

and

$$M = \frac{1}{4} \times 3.62 \times 12 \times 26.5 - \frac{1}{8} \times 3.62 \times 12^2 = 225 \text{ ton-ft.}$$

One fourth of this will be say 56 ton ft. then

$$d = \sqrt{\frac{56 \times 6}{10 \times 3}} = \text{say } 3.5 \text{ ft. mean thickness,}$$

but the top of the section is already fixed at 2.5ft., therefore the bottom thickness must be 4.5ft. The thrust must now be taken upon the two sections together

$$= \frac{\frac{1}{2} \times 62.5 \times 18^2}{2240} \times \frac{3}{4} = 3.39 \text{ tons.}$$

The weight of the wall will be

$$3.5 \times 10 \times \frac{140}{2240} = 2.2 \text{ tons added to that}$$

of the upper part = 1 ton, making in all 3.2 tons. The centre of gravity line of the lower portion will be

$$\frac{2}{3} \times 4.5 - \frac{2.5^2}{3(2.5 + 4.5)} = 3 - .3 = 2.7 \text{ ft.}$$

from outer face at bottom of section, or 4.5 - 2.7 = 1.8 ft. from inner face, while for the upper portion it cuts at 2.5 = 1.48 = 1.02 ft. from inner face. Then the mean centre of gravity line will cut it at

$$\frac{1 \times 1.02 + 2.2 \times 1.8}{1 + 2.2} = 1.55 \text{ ft. from inner face.}$$

The whole resultant will cut the base at

$$\frac{3.39 \times 6}{3.2} + 1.55 = 7.9 \text{ ft. from inner face,}$$

which is outside altogether. The maximum stresses will be

$$\frac{W}{A} + \frac{M}{Z} = \frac{2.75}{4.5} + \frac{2.75 \times (7.9 - \frac{4.5}{2})}{\frac{1}{8} \times 4.5^2} = .61 + 4.6$$

= 5.21 tons per sq. ft. compression and 3.39 tons per sq. ft. tension, the latter beyond safe limits. It is clear from this that in order to equalise the stresses the horizontal strength of this portion of the wall must be such as to take a larger proportion of the load, say one-third. Then the mean thickness will be

$$d = \sqrt{\frac{225}{3} \times 6} = \text{say } 4 \text{ ft.,}$$

and as the top is fixed at 2ft. 6in. the bottom will be 5ft. 6in. The weight of

the second section will be

$$4 \times 10 \times \frac{140}{2240} = 2.5 \text{ tons.}$$

making 2.5 + 1 = 3.5 tons in all, and the thrust on the two sections

$$= \frac{\frac{1}{2} \times 62.5 \times 18^2}{2240} \times \frac{2}{3} = 3 \text{ tons.}$$

The centre of gravity line of the lower portion will be

$$\frac{2}{3} \times 5.5 - \frac{2.5^2}{3(2.5 + 5.5)} = 3.4 \text{ ft. from outer face or } 5.5 - 3.4 = 2.1 \text{ ft. from inner face, while for the upper portion it cuts at } 1.02 \text{ ft. from inner face. The mean centre of gravity line will cut bottom of section at}$$

$$1 \times 1.02 + 2.5 \times 2.1 = 1.8 \text{ ft. from inner edge.}$$

The whole resultant will then cut the base at

$$\frac{3 \times 6}{3.5} + 1.8 = 7 \text{ ft. from inner face;}$$

The maximum stresses will be

$$\frac{W}{A} + \frac{M}{Z} = \frac{3.5}{5.5} + \frac{3.5 \times (7 - \frac{4.5}{2})}{\frac{1}{8} \times 5.5^2}$$

= .64 + 3.3 = 3.94 tons per sq. ft. compression and 2.66 tons per sq. ft. tension, which is just safe. It would occupy far too much space to go any further here, but the procedure will be to design the wall in stages by the methods shown above, resulting in a varying batter being given to the face. The arched shape would not be suitable for so short a span and for the conditions generally, and a circular tower would have no advantage.

HENRY ADAMS.

Gymnasium Spring Floor.

P. J. H. (SOUTH AFRICA) writes: "It is proposed to construct a gymnasium floor with a certain resiliency, to eliminate, as far as possible, any jarring to the performers. A wood floor existing in the present gymnasium has not been found satisfactory, as it wears very fast, and gives up a great amount of dust even after the most careful sweeping and cleaning. My idea is to use a 3-in. thick reinforced concrete core supported on springs as used for dancing floors, and to finish the surface with a layer of asphalt. The gymnasium would be about 40 ft. by 70 ft., but there would be a space of, say, 10 ft. all round for spectators which would not be required to spring.

"Is the idea practicable? If so, what proportions would you make the concrete in order to obviate any cracking? What reinforcement would you advise, what springs would be the best, and how would they be supported?"

—The information given is not very complete, but the idea is quite practicable. The following assumption has been made: The gymnasium floor is raised about 1 ft. above the ground and supported on sleeper walls about 5 ft. or 6 ft. apart. The mixture of concrete should be about 5 to 1, and only the best English cement, up to the British Standard Specification, should be used. Hy-rib would appear to be very suitable for this particular construction, as it would do away with the necessity for centering. Reinforcing rods would, of course, have to be placed at right angles to the rib to prevent expansion and cracking. The springs are about 4 in. in diameter and should be placed from 2 ft. to 4 ft. apart. There are various patents on the market, the "Valtor," manufactured by Messrs. Francis Morton, Junior, and Co., of 110, Cannon Street, London, E.C., being a reliable one. The patentees would doubtless supply more detailed information as to the springs.

LEGAL CASES.

An Architect's Claim for Fees.

In the Manchester County Court on May 18th Mr. P. C. Larmuth, architect and surveyor, of Manchester, claimed ten guineas as fees for plans prepared for some shops at the request of a Longsight builder named Richard Lomas. The Manchester Corporation declined to pass the plans, as they had decided to widen the road, which would necessitate the shops being set back about 5 yds. On the ground that such a set-back would be detrimental to the shops, defendant decided not to erect them, and refused to pay the architect's fees, contending that the plaintiff should have ascertained from the Corporation what the building line was to be. His Honour decided that it was the duty of an architect to satisfy all the requirements of the local authority, and that the plaintiff drew the plans at his own risk. He therefore gave judgment for the defendant. As, however, both plaintiff and defendant were really innocent in the matter, each would pay his own costs.

Nuisance Caused by Building Operations.

The case of Ffoulkes v. Salisbury-Jones and others was decided by Mr. Justice Parker in the Chancery Division of the High Court of Justice. The plaintiff was the tenant of Berkeley Cottage, Berkeley Square, London, W., and the first-named defendant was the owner of No. 27, Berkeley Square. The back of this house adjoined Berkeley Cottage, being separated from it by a party wall. In August and September, 1910, the back portion of 27, Berkeley Square was pulled down to allow of certain building extensions, Messrs. Vare Brothers, the other defendants, who were builders, being employed by Mrs. Salisbury-Jones to do the work.

The plaintiff complained that the defendants had not complied with the requirements of the London Building Act, 1894, and had not given her previous notice; and that the operations had been conducted in such a negligent way as to cause a nuisance to the plaintiff by dust and broken materials, that she had been put to inconvenience and expense, and that her work as an authoress and journalist had been interfered with by the defendant's operations. She claimed an injunction and damages. The trial of the action, with witnesses, occupied the Court for some days.

As reported in the "Times," Mr. Justice Parker, in delivering judgment, said that when a man pulls down his house for the purpose of building a new one he no doubt causes considerable inconvenience to his next door neighbours during the process of demolition; but he was not responsible as for a nuisance if he used all reasonable skill and care to avoid annoyance to his neighbour by the works of demolition. Nor was he liable to any action even though the noise and dust, and the consequent annoyance, were such as would constitute a nuisance if the same, instead of being created for the purpose of demolition of the house, had been created in sheer wantonness, or in the execution of works for a purpose involving a permanent continuance of the noise and dirt. The vital words, so far as that proposition applied to the present case, were, "If he used all reasonable skill and care to avoid annoyance to his neighbour by the works of demolition"; and they meant that a landowner, when he was going to pull down and rebuild a house, was under a duty to his neighbour to use reasonable skill and care in his operations.

The evidence in the present case was on some points contradictory, but his Lordship was satisfied that the plaintiff's house was, during the process of demolition of the other house and the removal of the debris, practically uninhabitable by reason of the brick and mortar dust coming into the rooms and causing damage. In such cases, whatever the legal obligation might be as to giving notice before commencing operations, it was only reasonable that notice should be given. No such notice had been given, nor did the defendants use such reasonable skill and care as was required. The neglect of proper precautions to protect the neighbouring house from dust showed a want of exercise of reasonable skill and care.

The legal duty which in the circumstances was imposed on the defendants had not been discharged, and the plaintiff was entitled to damages, which he put at £40, costs to follow the event.

DETAILS—OLD AND NEW.—XI.

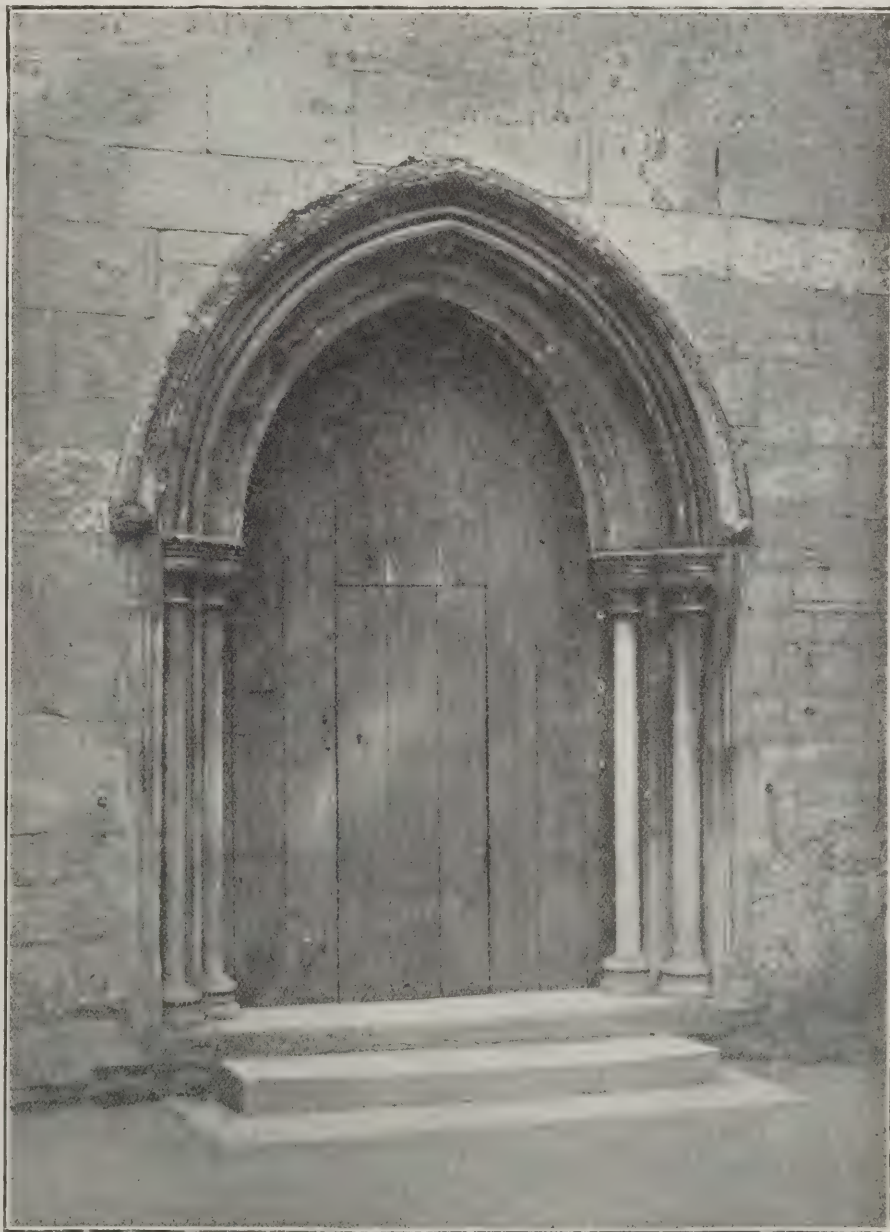
West Door, Salisbury Cathedral.

An old chronicler writes of Salisbury: "The cloister on the south side of the church is one of the largest and most magnificent in Britain." One external

wall continues the line of the west front, and is broken up with buttresses, unevenly spaced, close to one of which is the small door illustrated in this issue. It is of the same pure type of Early English as the Cathedral itself. Slender monolithic shafts of stone, with moulded capitals and bases, form the jambs and carry an arch composed of several members, with deep cuttings in it. The effect of these is to hold deep shadows, which contrast strongly with the comparative simplicity of the almost rectangular planes with detached shafts that form the jambs. A hood moulding is put above the arch. It is interesting to notice that the arch is built of three concentric rings of stone. Whether these small stone detached shafts replace ones of Purbeck marble it would be difficult now to determine, but it may be remembered that in the 19th century many of the marble shafts were replaced by stone. The cloisters were building during the second half of the 13th century (1260-84), although they were not completed until 1338.

A China Pantry.

This is a detail of much interest, as it embodies the experience of an architect of established reputation in domestic work—Mr. Geoffry Lucas. The drawing is self-explanatory.



SALISBURY CATHEDRAL: EXTERNAL WEST DOOR TO CLOISTERS.

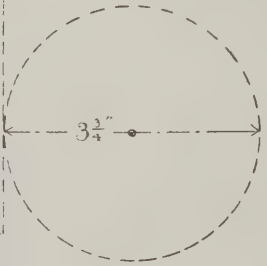
SALISBURY CATHEDRAL

EXTERNAL WEST DOOR INTO THE CLOISTERS



0 1 2 3 4 5 6 7
Scale of Feet
Read as Inches for Details

JAMB MOULDING
SHEVN DOTTED



BASE



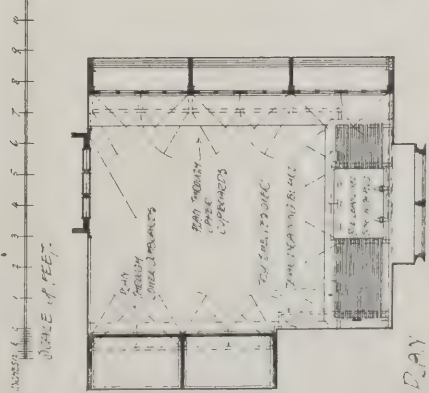
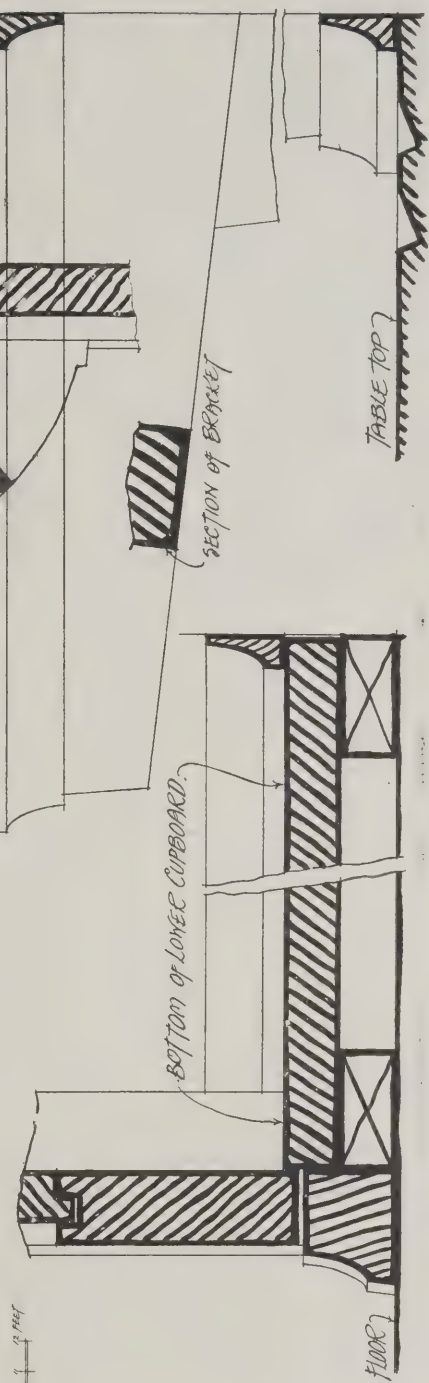
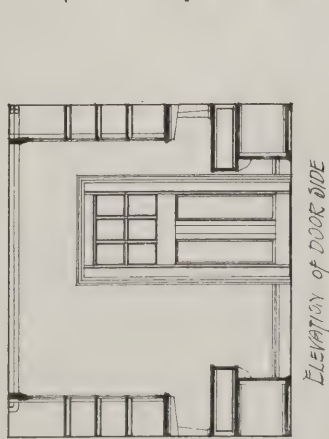
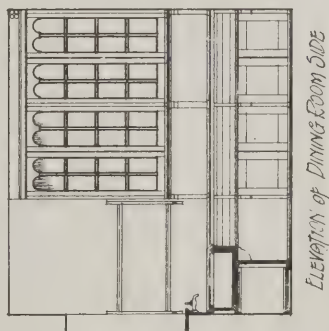
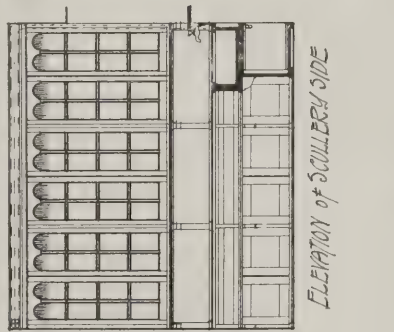
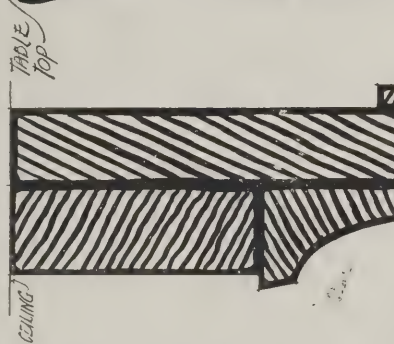
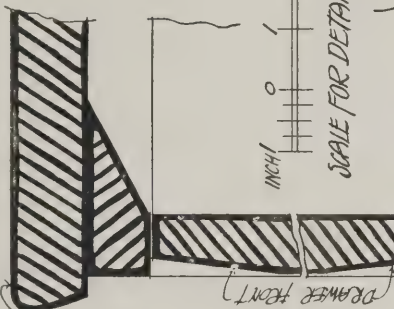
Line of Capitals

CAPITAL

ARCHIVOLT

D RIPSTONE

CHINA PANTRY.
HOUSE AT
BRIMBOURNE.
HERTFORDSHIRE.
GEORGE LUCAS, ARCHT.
Architect.



FIRE PREVENTION NOTES.

*Coronation
Stands.*

For the erection of a stand at the south-east corner of St. Paul's Churchyard, from which to view the Royal Progress on June 23rd, a faculty had to be obtained. Mr. R. V. Somers-Smith, Clerk to the Grocers' Company, who applied to the Consistory Court, on behalf of that company and the companies of the Skinners, Ironmongers, and Vintners, mentioned that similar stands were erected in the Diamond Jubilee year of Queen Victoria in 1897, and in 1902 at King Edward's Coronation. The application, it was stated, had been approved by the Corporation, who had planted, laid out, and kept in repair St. Paul's Churchyard under the provisions of the Open Spaces Act, a reference of which the full significance is realised when the stand is demolished and the destruction to turf, trees, shrubs, hedgerows, and paths is seen. Such havoc, however, admits of easy remedy, and the barren site soon smiles again with verdure. A more important point that was mentioned was that the Dean and Chapter of St. Paul's, in giving their consent, had stipulated that there should be a space of at least 12 ft. between the stand and the walls of the cathedral, and that the stand should be built of non-inflammable wood. These are very proper precautions that should have been observed in every similar instance; but, at Westminster, the rather lame excuse for neglecting to use non-inflammable wood was the extra expense that the use of the safer material would have entailed. It would seem, therefore, that, though on loyalty bent, the authorities, like John Gilpin, "have a frugal mind." Their frugality would cost us dear, however, if the stands caught fire. So tremendous a risk to venerable and priceless buildings ought not to be incurred on so flimsy a pretext. It may be difficult to avoid putting up those huge stacks of timber on such an occasion; but the risk could be minimised by the use of available materials; and, by failing to adopt such materials, a bad example has been set in high quarters. All the more credit to the Dean and Chapter of St. Paul's for insisting upon the more prudent course.

*Town Fire
Dangers.*

In the House of Commons, Mr. Wedgwood asked the Home Secretary "whether his attention had been called to the dangerous fire which had occurred in a film shop near Charing Cross; and whether any steps would be taken to prevent such shops from being placed on the ground floor beneath rooms where people slept or were employed in large numbers." In reply, Mr. Churchill said that he would communicate with the London County Council in this matter. He added that the Home Office had more than once suggested that it would be desirable that the Council should obtain powers to deal with this danger; and he had no doubt that the Council would consider the question of applying to Parliament for the necessary amendment of the London Building Acts. He promised that every possible precaution would be taken in the meantime to prevent such occurrences. Mr. Wedgwood's reference was no doubt to the fire in Cecil Court, a narrow thoroughfare connecting Charing Cross Road with St. Martin's Lane. The fire was marked by exciting incidents. Two women aroused intense excitement among

the crowd by climbing through a window on the third floor and creeping along a ledge hardly a foot wide for a distance of 40 ft., when they were pulled through a window to safety. Several women then appeared at windows of the second floor. Some men in the crowd below held a tablecloth, towards which four women jumped one by one. All were more or less slightly injured. The stretched fabric is a desperate expedient, and the best that can be done with it is to prevent the worst consequences of a leap from a very moderate height. The narrow ledge and the tablecloth speak eloquently of the need for further attention to the means of escape from fairly tall houses in congested districts. The Home Secretary's promises leave this question untouched, and do not greatly reassure us on the points specifically dealt with.

*Discouragement of
Fire Prevention.*

Unfortunately, it is only when some dramatic incident occurs to point the moral that the authorities can be got to give serious attention to the means of minimising fire risks. The lack of imagination in such matters has cost many valuable lives. Seemingly, it is only after terrified women have leapt from windows, or have perished miserably through failure to take this appalling risk, that the official mind begins to operate beneficially on the lines of amelioration, and to take cognisance of the methods and materials that, if universally employed, as they certainly should be, would render calamitous fires extremely rare, if not absolutely obsolete, when fire insurance would become almost superfluous. More than this—not only are the laws, by-laws, and regulations of various authorities defective; they are sometimes positively obstructive. For example, we have been told of a well-meant private effort at fire-prevention being discouraged by the Water Board. Certain new premises have been erected at great expense in a rather congested area, and the proprietors, although their business involves only a minimum risk, nevertheless are anxious to protect to the uttermost the finely designed and expensively fitted building in which they take a legitimate pride, and with that object had hoped to establish a special water supply. This, they were informed, would cost them a guinea a year for each floor—seven guineas in all. This expense they were willing to incur. Then came a difficulty with regard to the necessary connection with the main. The firm were informed that this work would cost them twenty pounds. They thought it rather hard that they should have to pay this sum for the privilege of becoming the Board's customers to the tune of seven guineas a year, and they suggested that, as the road then happened to be up, so that the excavation of a few feet of clay would represent the chief work involved, ten pounds would easily cover the cost, and that sum they would willingly pay. The Water Board declined this compromise, and the firm does not seem very blameworthy in refusing to proceed with the installation. This may or may not be a typical instance of the inflexibility of the Water Board's regulations. At any rate, it seems to represent a wrong attitude with regard to fire-prevention, and bad business as a mere matter of accounts; for surely, in the long run, the Board would gain by charging the lowest possible rates for connecting themselves to a constant supply of income such as the seven guineas a year which this firm were anxious to sub-

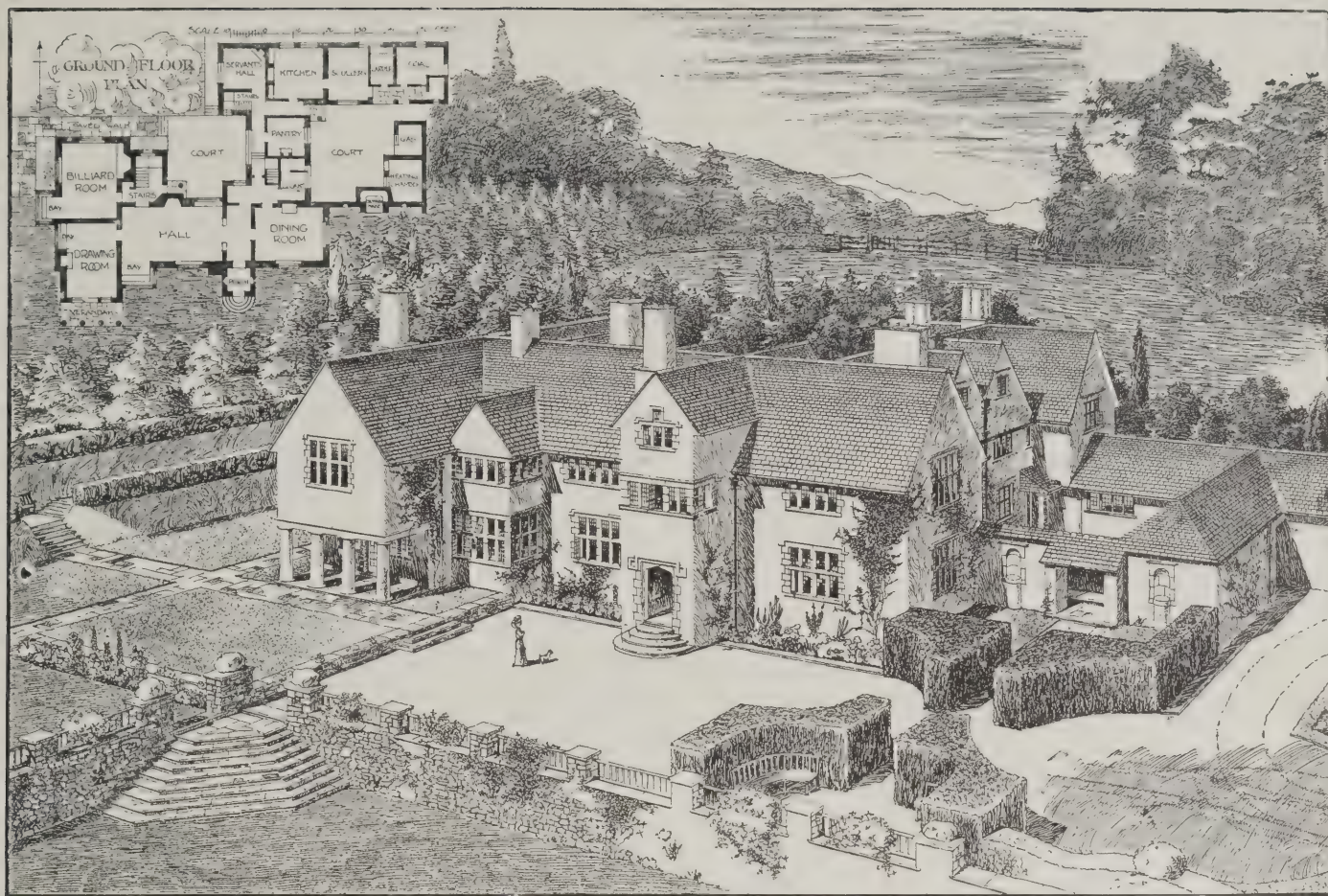
scribe, and which will now be lost to the Board.

*The Safety of
Concentric Wiring.*

Mr. Bernard M. Drake, M.I.E.E., in a communication to the Press, points out what he considers to be a considerable fire danger in connection with the increasing use of concentric wiring. The safety of concentric wiring, he writes, consists in the enclosing of the live wire and all live parts in metal connected to earth, which metal is usually employed as the return conductor for the current. Should the enclosing cover be forced in contact with the live portion the fuse immediately acts, and there is no doubt that the system from the point of view of safety from fire is quite sound. He alleges, however, that, in order to save expense, some contractors have adopted the method of carrying the one concentric conductor past the lamp and down to the switch, thus placing the switch not in the live wire but in the earthed return; and that where this is done the fuse no longer affords protection, because if the outer cover of the switch wire becomes dented and touches the inner wire the result is to light the lamp or lamps through the defective contact thus formed. Thus may be caused an arc with sufficient heat to set fire to anything inflammable that happens to be near. He advises, as a remedy, the use of *two* complete conductors (mentioning "the neat metal-covered conductor known as 'Stannos'") leading to every wall switch, and he points out that the danger to which he alludes has been fully appreciated by the framers of the new rules of the Institution of Electrical Engineers, Rule 65 providing that "No switches, fuses, or circuit-breakers may be placed in the external conductor."

*An Eighteenth
Century Mansion
Destroyed.*

To the long list of destructive fires in interesting old country houses must now be added that at Sledmere House, the seat of Sir Tatton Sykes, in the heart of the West Riding Wolds, between Malton and Driffield. The building, which was designed by Rose for Sir Christopher Sykes in 1780, had been highly esteemed as being finely typical of its period—altogether an excellent example of the best period of Georgian architecture, and its handsome library—110 ft. by 30 ft.—contained two fine Adam mantelpieces, the house throughout being decorated in the Adam style. The furniture included some fine examples of the work of Hepplewhite and Chippendale, and a good deal of this, as well of most of the valuable pictures, was saved, the fire having broken out at luncheon time, when plenty of help was available. Apparently, however, this force could not be directed to the suppression of the fire, no organisation or appliances for that purpose being mentioned; and when the brigades arrived from Malton and Driffield the fire had become almost unmanageable. The roof fell in, and only the walls were left standing. It is stated that the fire originated in the kitchen chimney. If that is the fact, it emphasises the advice that has been repeatedly urged in these notes—that the flues of old houses ought to be periodically examined for defects. Ordinarily it seems to be forgotten that they suffer extraordinary wear and tear, and, even when quite properly constructed, are liable to develop dangerous proclivities as the result of accident or deterioration. Houses so well worth preserving should be regularly inspected by a competent architect having a sufficient knowledge of the science of fire-prevention.



DESIGN FOR A HOUSE IN THE ENGLISH LAKE DISTRICT. BY W. L. DOLMAN.

A WOOD FLOOR SUPPORTED BY
CONCRETE BEAMS.

In the new four-storey office building of the Fore River Shipbuilding Company, at Quincy, Mass., reinforced concrete is used in columns, girders, and floor beams, though the floors themselves are of wood, carried directly by the beams, the usual reinforced concrete slabs being omitted entirely. The beams and girders are T-sections, and to the sides of the flanges are bolted spiking pieces which project above the top of the structural concrete to form a trough. This is filled with cinder concrete on which the wood flooring is nailed, thus securing bearing for the plank across the full width of the T-flange. The spiking pieces are attached by means of bolts passing from one spiking piece to the other through the top of the beam. Reinforcement of expanded metal is imbedded in the top of the beam, thus taking care of the temperature stresses and tying the flanges to the stem.

MODEL HOUSING AT BYFLEET.

The President of the Local Government Board has a very pretty turn of epigrammatic expression, and in the course of his speech when he inaugurated the first portion of a new estate of model cottages and flats erected by the Byfleet Tenants, Ltd., at Woking, he was in very good form. What was spent in housing, he said, was almost saved in hospitals, and what was gained by good homes for the people, homes that were something more than mere shelters, was a steady return

in less lunacy, and in more sober men and more womanly women. Mere charity in housing, however, was a charity that covered a multitude of industrial sins—charity in rent meant a premium on low wages. The estate has an area of six and a half acres. About one-half has been built on, at a cost of £15,000, and the accommodation now available includes thirty cottages, fourteen single-room flats with bed-alcove, and eighteen three-room flats; the rents ranging from 4s. 9d. a week to 9s. 6d.

TRANSPORTER BRIDGE OVER THE
TEES.

The new transporter bridge which Sir William Arrol and Co., of Glasgow, are completing over the Tees is one of the largest of the type ever erected. It has a main span of 570 ft., and the height above the water is 160 ft. to the underside of the structure. The main span stretches between two steel towers. A set of rails runs along the underside of the main river span, and on these rails a carriage is propelled by electric power. For the purpose of transferring traffic, the floor of a car suspended from the carriage is arranged level with the roadway on both sides, and the car is capacious enough to carry large vehicles as well as 600 foot passengers. The towers rest on caissons sunk 90 ft. below the river bed. The construction is being carried out under the general direction of Mr. A. S. Biggart, who superintended the completion of the Forth Bridge, and who is one of the directors of the Arrol Company.

TRADE AND CRAFT.

"Selected Shades."

Under this title, Messrs. R. Gay and Co., Ltd., Langthorne Works, Stratford Market, London, E., issue, in book form, specimens of a comprehensive range of colours. The specimens are arranged in two sets, the one above the other, so that by simply turning over the leaves any two shades can be brought into juxtaposition and compared. Messrs. Gay, whose paints are specified on all schedules of H.M. Office of Works, and have been employed on most Government buildings, include among their specialties the Tegoline and Langthorne enamels, impenetrable and Etruscan paints, water paint and Presto white, etc. This book of specimens, in which the fine quality of the various tints is clearly evident, will be found very valuable in the selection, harmonising, and contrasting of shades, and in this respect affords in itself a means of liberal education in the subject.

The "All-time" Damp-Course.

An interesting booklet, bearing the title "An Object of Antiquarian Interest, by an Architect," bears on its cover an illustration of the lead anchor of the first century A.D., found off the coast of Cyrene, and deposited in the Græco-Roman basement at the British Museum. Since this anchor depended from the hawsepipes of the ship to which it belonged, nearly two thousand years have passed, and yet it retains its shapeliness, and is probably, as the writer of the booklet supposes, "from core to surface a mass of true, brilliant, and homogeneous metal." It is a very striking testimony to the durability of lead, but in this respect is by-

no means unique, as many equally ancient examples of the imperishability of that metal have come down to us. Hence it is ingeniously deduced that a continuous layer of lead, imperishable and impermeable, embedded between and closely compacted with two protective layers of specially prepared fibrous asphalted sheeting, form an ideal damp-course, as prepared by Alex. G. Lee, 14, Bedford Row, W.C., and as supplied to the Admiralty, the War Office, the Board of Trade, borough councils, the Great Western Railway Co., etc. Obviously it resists climatic influences and cannot squeeze out. It is stocked in all wall widths, and can be cut with a knife. The booklet includes some useful diagrams showing the application of the material to various uses.

Glasgow Exhibition.

At the Scottish Exhibition at Glasgow, of which an illustrated account appeared in our issue of May 17th, Messrs. Wailles, Dove, and Co., Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne, are showing their various "Bitumastic" specialities on Stand No. 435 in the Kelvin Hall. The patent "Bitumastic" solution is a brilliant black paint of great tenacity, flexibility, and durability, having a large covering capacity, drying quickly, and being specially valuable as a protective and an anti-corrosive for iron and steel structures where these are exposed to chemical fumes and other destructive agencies. The firm are showing, also, samples of their patent "Bituros," which is a tasteless and colourless composition for drinking-water tanks; and their patent "Bitured" and other paints.

Steel Office Fittings.

At "The City of London Business Exhibition," held at Winchester House, Old Broad Street, E.C., from May 8th to June 3rd, much of the available space was occupied by Roneo, Ltd., 26, Holborn Viaduct, E.C., whose wide range of office appliances included samples of the steel cabinets and office furniture to which attention may be appropriately drawn in this fire-prevention issue. These fittings are not in the experimental stage, but standard types. The reasons set forth for preferring steel cabinets to wooden are that the former will not burn, do not skrink or swell, are more durable, are more easily kept clean, and are proof against rats and mice, vermin and dust. Another strong point in favour of steel drawers is that, being fitted on roller suspensions or ball bearings, they run in and out with delightful ease, and it is claimed that "the heavier you load them the easier they run." All kinds of steel filing cabinets and other office fittings, comprising complete equipment for any kind of business, were shown; and their elegance and convenience, even if they did not possess the cardinal virtue of being incombustible, would strongly recommend them for general adoption. Other exhibits included in the exhibition were the "Triumphator" patent calculating machine (Triumphator Calculating Machine Co. of Great Britain, Ltd., 2, Bixieth Street, Liverpool); the Burroughs adding machines (Burroughs Adding Machine, Ltd., Burroughs Buildings, Cannon Street, E.C.); the "Protectograph," a machine for crushing a limit line through a cheque, for the prevention of forgeries (Halsby and Co., Ltd., 97, Queen Victoria Street, E.C.); the "Miche-lius" stamp affixing and checking machine (F. Kleemann, 53a, Aldersgate Street, E.C.), and a number of others.

FEDERATION NEWS.

Yorkshire Federation.

The monthly meeting of the Executive Council of Yorkshire Federation was held at the Mansion, the Park, Dewsbury, on May 18th. Mr. A. J. Forsdike, president, occupied the chair, and was supported by 41 delegates from Federated Associations.

A letter was read from the Labour Department of the Board of Trade conveying cordial thanks to the Federation for their full and interesting observations on apprenticeship in the building trades.

An invitation was received from the National Housing and Town Planning Council for the Federation to appoint two representatives on the Yorkshire Advisory Town Planning Committee. The Federation resolved to pay the affiliation subscription of £2 2s., and appointed the President and Mr. J. Dawson as their representatives on the Yorkshire Advisory Town Planning Committee.

The President reported that the Finance and Emergency Committee had dealt with the principles raised by the Government proposals in the National Insurance Bill, and their preliminary recommendations were submitted to and carefully considered by the Council. The recommendations of the Committee were approved, and instructions given for them to be submitted to the Employers' Parliamentary Council. The local associations were invited to take the Bill into careful consideration, and favour the Federation with their observations before next meeting.

A letter was read from the National Secretary calling the urgent attention of members to the provision of the relief afforded by the following sections of the Revenue Act, 1911, and advising that in order to obtain the benefit of such relief, it is absolutely necessary that applications should be made within three months from the 31st March, 1911. The following sections give relief in certain cases:—

"Section 2.—In the cases where the original site value has been finally settled before the passing of this Act, an application may be made notwithstanding anything in sub-section (3) of section two of the Principal Act, under that sub-section, for the purpose of giving effect to this provision within three months after the date of the passing of this Act, and the Commissioners shall, in such a case, alter the original site value as finally settled, in such manner (if any) as may be necessary to give effect to the amendment made by this provision, and, in cases where any amount has been paid on account of duty, the Commissioners shall make such repayment as may be necessary to adjust the amount paid to any alteration of value made in pursuance of this provision."

"Section 5.—Notwithstanding anything in sub-section (1) of section twenty-six of the Principal Act, the Commissioners may, on the request of the owners of any pieces of land which are contiguous, and which do not in the aggregate exceed one hundred acres in extent, value those pieces of land together for the purposes of that Act, although those pieces of land are under separate occupation, if they are satisfied that in the special circumstances of the case it is equitable to do so; and any such valuation may be made under this provision, although any of the pieces of land have been valued before the passing of this Act, if the request for the valuation under this provision is made by the owner of the land within three months after the passing of this Act, and in that case any valuation previously made shall be of no effect."

A letter was read from the Northern Centre recommending the constituent Federations not to assent to any alteration in the present basis of National subscription, and confirming the recommendation of the National Administrative Committee to reduce the allocations to the reserve fund by 50 per cent. It was resolved to inform the National Administrative Committee that this Federation cannot see its way at the present time to support an increase in the amount of subscription payable by the Federation to the National Federation; and to further request the Administrative Committee to confirm its own recommendation that the allocation to the Reserve Fund be reduced to a sum equal to 50 per cent. of the amount of the annual subscription.

It was reported that the Northern Centre had recommended to the three Federations that the present allocation of commuted National subscription should be continued, viz., on the existing number of representatives which each Federation has on the National Federation. The Federation was reminded that at the Federation meeting held at Sheffield it was resolved for the current year to accept the commuted basis, and to undertake to pay a subscription of £105 6s. 8d. to the National Federation. It was resolved to inform the Northern Centre of the decision which has already been arrived at with respect to the amount of subscription to be paid this year by this Federation to the National Federation.

It was reported that the Northern Centre had referred the question of a Centre Year Book to a committee to consider and report, and that the question would be further dealt with when this was received.

Councillor W. G. England, J.P., reported that the annual meeting of the Northern Centre Conciliation Board was held in Southampton on May 15th, when Mr. Wilkinson was reappointed President, and an appeal from Hull with respect to bringing in certain worked stone into the city was satisfactorily settled.

Plasterers' Joint Committee.—Attention was drawn to the fact that two notices of appeal from Yorkshire had been forwarded to be heard at the

annual meeting of the Joint Committee of Appeal, to be held on Friday, June 2nd, one from Hull as to interpretation of working rules, and one from Bradford as to railway fares being paid to men engaged on the works.

It was reported that Insurance Companies were still realising losses in connection with insurance under workmen's compensation policies, and several of the chairmen were foreshadowing the necessity of increasing the premiums. Unfortunately this was the experience in connection with the special Federation scheme, and it had been necessary to revise a few of the rates, especially machinists', to bring them more in conformity with those for some time in operation by tariff offices. The general builders' rates were not, however, being interfered with. The Federation gratefully acknowledged the courteous and considerate manner in which their relations with the Excess Insurance Company and Lloyd's Underwriters had been maintained, and the generous treatment which has been extended in connection with the settlement of claims; and accepted the arrangement for the insurance of members for a further period. A strong appeal was made to all members to give loyal and undivided support to the Federation scheme of insurance.

Attention was drawn to a recent case of an insurance company who sought to relieve themselves of their legal liability under an insurance policy on the ground that the employer did not keep a proper wages book. The judge held that the reference to the keeping of a wages book was for the purpose of making a necessary return of wages at the end of the period, in order to make an adjustment of premium, and was not such an essential form of contract between the insurance company and the employer as to make the contract void in the event of non-observance.

A Harrogate member called the attention of the Federation to a dispute which his firm had with the Harrogate Corporation with respect to trade commission on a contract in connection with the Royal Baths extension. The quantities are incorporated with the contract, and provide that all prices are to include for profit. The Federation secretary was requested to write a suitable letter to the Town Clerk and ask under what circumstances the Corporation seek to repudiate a claim which appears to be supported by the quantities.

An invitation to hold the next meeting in Grimsby was cordially accepted, and the date fixed for June 16th.—J. DAVIDSON, Secretary.

[The reference, in the fourth paragraph of the above report, to the submission of recommendations to the Employers' Parliamentary Council is a further indication of the use and importance of that body, upon which the National Federation of Building Trades Employers is ably and vigilantly represented. A leading article in the present issue deals with a memorandum that has been issued by the Employers' Parliamentary Council on an important point raised in Clause 3 of the Trade Unions (No. 2) Bill, from which it will be seen that the Council remain keenly alert to the interests of employers.]

Cardiff.

The monthly meeting of the Committee of Cardiff Master Builders' Association was held at the Association offices on Thursday, May 18th, 1911, Mr. W. T. Morgan in the chair.

Representatives of the association on the Cardiff Chamber of Trade and on the joint committee with the Cardiff and District Builders' Association, respectively, were appointed.

The secretary read further correspondence with Mr. W. Hockey, the secretary of the operative stonemasons, with reference to an alleged breach of the worked stone rule.

Mr. H. J. Cox, worked stone contractor, Bristol, was admitted to membership.

The secretary read correspondence with the Newport Association re working hours, winter and summer; also correspondence with the Swansea M.B.A. re water rentals charged at Cardiff.

The secretary read letter from the National Free Labour Association asking for financial assistance to enable them to continue their work in South Wales, but as it was felt that it would best serve our purposes to keep quite free of both trade unionists and non-unionists, it was resolved that we do not entertain the application.

Government Insurance Scheme.—The secretary read letters from Mr. W. H. Billings, the secretary of the South Wales Federation, and Mr. William Thomas, the treasurer, the latter enclosing a copy of a report sent by him to the general secretary, as a basis for discussion. At the outset disappointment was expressed that in preparing the Bill the Government had not, according to expectation, included the provisions of the Workmen's Compensation Act, and thus granted to the employers some measure of relief from the onerous obligations of that Act. It was felt that to be consistent and logical the State should be prepared to undertake the same duties and obligations to the workers in respect to accidents, as they had undertaken by the Bill in regard to sickness, invalidity, and unemployment. It was also felt that the employers ought not to be called upon to insure the workmen against unemployment, which was made compulsory upon the building trade by the Bill, in addition to the health insurance. It was resolved that the secretary write to Mr. Billings setting forth these grounds of objection.

South Wales Federation.—The following delegates were appointed for the current year, namely, the President, Messrs. J. Gibson, J. E. Turner, R. H. Bardo, S. Shail, and Stephen Davies.—I. WATKINS, Secretary.



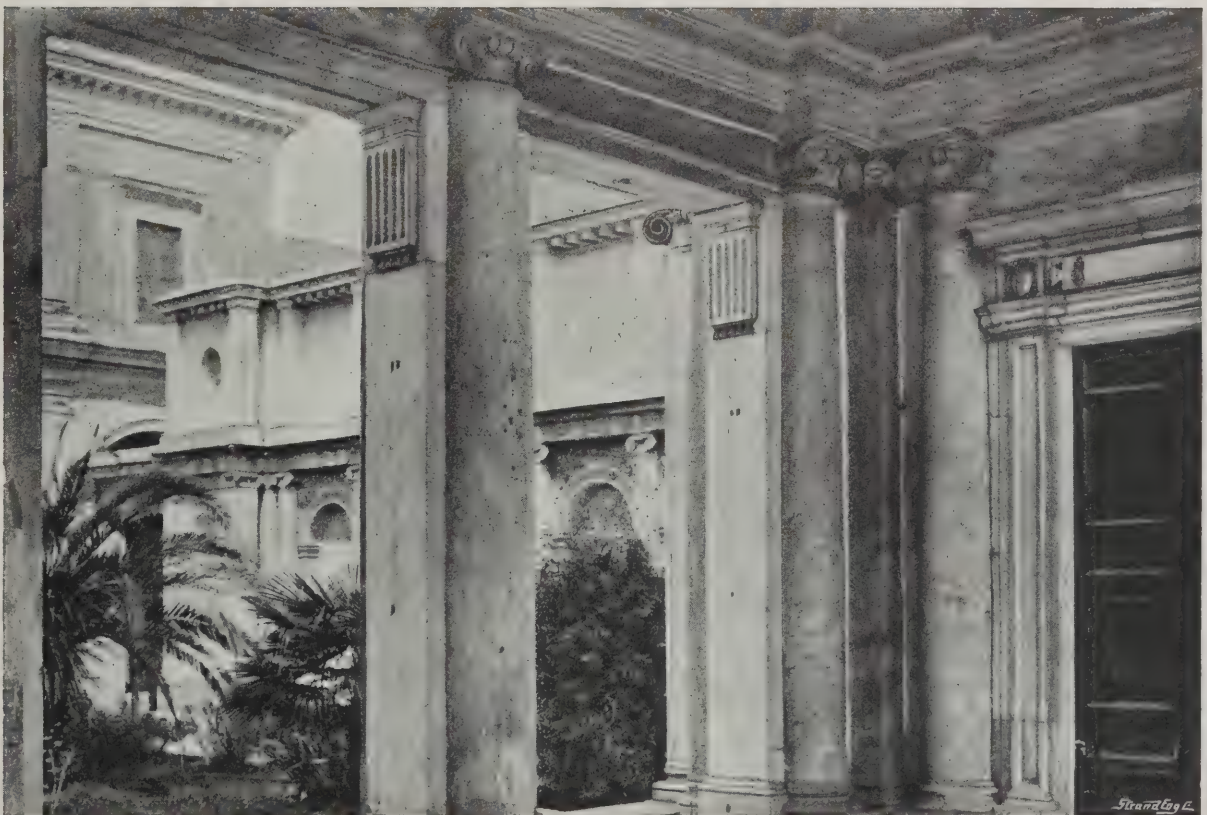


THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 14th, 1911.

Volume XXXIII.

No. 855.



An article dealing with this delightful example of Vignola's work appeared in our issue for April 19th last.

DETAIL OF VILLA PAPA GIULIO. ROME. VIGNOLA, ARCHITECT.



ENGLISH EIGHTEENTH-CENTURY ROOM AT THE SELFLEDGE STORE, OXFORD STREET, LONDON. R. FRANK ATKINSON, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 14th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 855.

NOTE : *The List of Contents will be found on page IV. of the front advertisements.*

Architecture in the Abstract and in Concrete.



REMARKABLE paper was read by Professor Beresford Pite on Wednesday morning last at the first "summer meeting" of the Concrete Institute at Denison House, Westminster, on the subject of "The Æsthetic Treatment of Concrete"; a paper which, considering the im-

portance and the difficulty of the subject, and the well-known ability of the lecturer, ought to have commanded a large and representative audience; but the leading London architects were conspicuous by their absence. Probably none of them like concrete much; but it is a question worth their consideration, whether they may not in the end be obliged to like it, or to put up with it more or less, whether willingly or not; and at all events, what Professor Pite had to say on the subject was certain to be worth hearing. The paper was, in fact, an attempt to put concrete into its possible place in architecture, on the basis of a review of the whole past of architecture, and to consider whether the process of reinforced concrete building was one that could be utilised for the development of the much-desired original and modern style or architecture. Whether such original style is really "much desired" may be questioned. It was at one time; the idea was in everyone's mouth a good many years ago; but there seems now to be rather a reaction in favour of traditionalism in architecture. And at all events the new and original style will not come by thinking of it and trying to devise it; indeed, as the lecturer said at the outset, although he had come to speak of the "æsthetic treatment of concrete," it might be much better to leave out altogether the word "æsthetic" and the idea which it connotes, and to remember that simplicity of intention in constructional design may result, and has resulted, in an undesigned beauty reached without any special treatment towards that end. This is undoubtedly the case with some engineering works, such as the Menai Suspension Bridge and the Forth Bridge; though the latter, we think, is impressive rather more by its scale than by its form; the cantilever principle on a great scale does not lend itself very well to the production of good lines; while a suspension bridge, large or small, can hardly help being a pleasing object, though structurally, for its practical purposes, it is far inferior to the cantilever bridge; it has not the same rigidity of roadway. And though it is true that engineering structures which are pleasing are so from the display of good construction merely, and are nearly always spoiled by the attempts to ornament them (as the Tower Bridge emphatically proves), it does not do to push the idea too far and explain all architectural beauty as arising merely out of structural problems. It is quite true that the perfected Gothic vault developed out of a contention with structure, but the Romanesque cathedrals were built for the sake of architectural effect, for all that; they were not mere engineering works.

Professor Pite propounded four initial conclusions or axioms, as a basis for dealing with the subject: (1) "We have

no instructive guidance towards an unbiassed originality for a concrete architecture"; which is undeniable. (2) "Abstract principles, like those invoked of proportion, are of no assistance"; also true—"proportion" is a vague term which may mean anything or nothing. (3) "Superficial treatments, as by colour, are insufficient for architectural expression, though valuable in assistance"; a point to which we will return. (4) "The texture of concrete surfaces modifies and imparts special character to any forms employed for architectural purposes." This was the most important of the propositions, and it brings us round after all to traditional architecture. For the conclusion deduced from it was that, while the new conditions of structure in concrete, and considerations of utility, may spontaneously determine proportions and develop æsthetic qualities, "the scholarly and critical analysis and employment of traditional architectural forms, suitably modified for execution in concrete, is the proper method for the æsthetic treatment of concrete."

This is rather a new form of proposition for concrete architecture. We have had it often laid down to us that concrete, being an entirely new form of construction, must or ought to give rise to a totally new form of architectural design arising out of the nature of the material. The question is, what form of architectural detail does the material suggest in itself? and the answer, we take it, is *nil*. That, indeed, is the position taken in the first of Professor Pite's preliminary axioms—"we have no instructive guidance towards an unbiassed originality in concrete architecture"; and at this stage of the argument we begin to see why that axiom was inserted; it was to clear the way for a reference to traditional forms of architecture. This is, of course, at variance with the position suggested at the outset of the paper, that simple construction ends in developing its own æsthetics in an unconscious manner. But Professor Pite was prepared for that. In a rapid survey of architectural history, aided by some ghost-like lantern slides only dimly seen in the undarkened room, the lecturer demonstrated that several at least of the great styles of the past had been made up of details adapted from or suggested by methods of construction in quite different materials. We should rather doubt whether all of his too limited audience realised what the lecturer was driving at; but it was a most ingenious argument, only we could not quite accept all the statements on which it was based. The Egyptian Temple architecture, with the sloping lines of its pylons and containing walls, was based on the mud hut, piled up in the shape in which mud bricks would best stand. There may be something in that, though we entirely decline to accept the Egyptian cavetto cornice as arising out of anything in the mud hut architecture. We may also remark, in passing, that it was hardly correct to speak of it as a mud architecture transformed into granite architecture; as a matter of fact, there is not much granite in Egyptian architecture; it is mostly sandstone. The Greek Doric was a stone or marble architecture developed out of wooden forms. As to the Doric column, we decline entirely to accept the wooden origin; the Doric column was much more probably derived from the massive columnar architec-

ture of Egypt; and even as to the superstructure we believe that the "wooden origin" theory of some of the details is more than doubtful, and has been accepted far too hastily; but the reasons for this opinion would be outside the present subject. The argument, however, was a very ingenious one, as a defence of the lecturer's general position, and some points were no doubt made in it, especially as to the unstructural ribs in the Tudor vaulting, the survivals of a different form of structure, and the imitation, again, of these unstructural ribs in Elizabethan plasterwork.

The conclusion we are invited to accept is that for concrete buildings we need not break away from traditional architectural forms; we have only got to modify them in accordance with the nature of the new material. We certainly like the conclusion, but it is rather difficult to put into practice; concrete is such a stubborn material and so difficult to model in any effective manner. The engineers, as appeared in the course of the discussion (or some of them at all events), would like the sacred material to be left in its unadorned simplicity; the result would be honest, no doubt ("Can beauty have better commerce than with honesty?" as Ophelia says); but we fear it would hardly pass for architecture. To the remark which one engineer voiced in the discussion, that ideas as to what constituted architectural beauty changed from age to age, Professor Pite made the triumphant retort that the Parthenon, which no doubt appeared beautiful to the generation for which it was built, appeared equally beautiful to us in the present day, and therefore there was evidently some permanent and continuous element in architectural beauty. Nothing could be better or more conclusively put.

We are left, then, with the suggestion that for the architectural treatment of concrete we need not abandon the long line of architectural tradition; we have only to modify traditional details to suit the nature of the material. It is an interesting suggestion; it may prove a practically helpful one. There is the opposite view, also, which was supported by the chairman, Sir Henry Tanner, that concrete was merely a structural material, to be faced with a stone architectural design, just as buildings of which most of the structure is brick are faced with stone. And the advocates of architectural truth must not dismiss this idea with too much contempt, when it is remembered that it was the accepted practice of the Romans, the greatest of all concrete builders, and that the Colosseum is in fact a brick and concrete structure faced with a stone architecture. It would be more genuine without the stone facing and columnar orders, no doubt; but would it be as pleasing? On the other hand, there is the fact that concrete gives us a new texture, different entirely from that of stone or brick; and texture, as Professor Pite did not fail to point out, is an important element in architectural effect.

In regard to the assistance of colour in giving effect to concrete buildings, while there is, of course, plenty of opportunity for contrasts of surface colouring in different portions of a building, we may also support the suggestion made in the course of the discussion, that mosaic is a decorative material peculiarly suitable for use on concrete. It is not open to the objection of being a sham, like the use of stone or terra-cotta facing; it is a material that does not profess to stand alone; it must be put upon something, and it could have no backing more convenient and suitable than a concrete wall.

Whether there will be any practical outcome of the lecture and the suggestions made therein one can only conjecture; but there can be no question that the hearing of it was an intellectual treat. It is proposed that, after the paper has been printed in full in the *Transactions* of the Concrete Institute, there should be a meeting called to discuss it further. If that is done, we hope that the leading architects will not neglect the occasion.

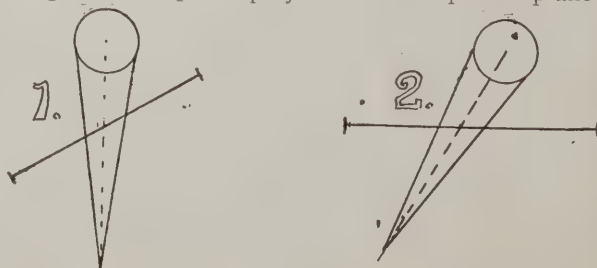
The St. Paul's Bridge Controversy.

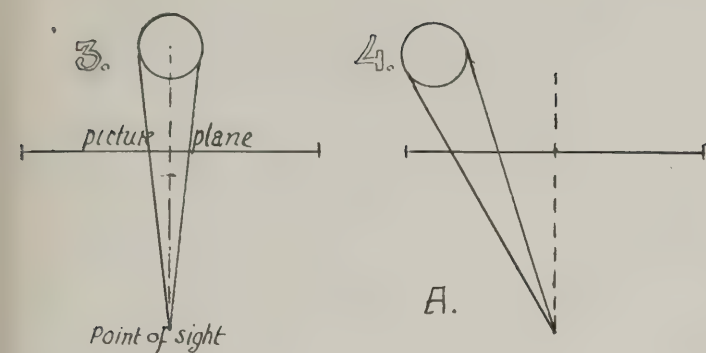
T O-NIGHT (Wednesday) the House of Commons will in all probability enjoy an animated discussion on the presentation of the Corporation of London (Bridges) Bill for third reading; for it seems likely that the Bill will be vigorously attacked, and doubtless as energetically defended. Each side has addressed a memorandum on the subject to every member of the House; the "whip" put forward by the opponents of the Bill being signed by a dozen Members of Parliament of both parties. In the Corporation memorandum it is ingenuously stated that the bridge and approaches "will form an imposing thoroughfare dominated by the dome of St. Paul's Cathedral." "Dominated by the dome" is a very pretty expression, but it hardly does justice to the sidetracked and casual view that the new bridge will afford. The Corporation object against the Institute's proposal that it would involve taking the traffic to "a dead end" and that therefore inconvenience would arise from the mingling of the traffic for a short distance with the east and west traffic, would render impracticable the formation of a tramway subway, and would involve the construction of a skew bridge, and an enormously increased expenditure on the demolition of property. These contentions show how easily the Corporation can throw off at will the optimism which they assumed with regard to the "dominating dome." For the "dead end" is purely imaginary, the subway difficulty could easily be overcome, and the "enormously increased expenditure" on demolition exaggerates a vague assumption. The duty of Parliament is plain. It will reject the parochial and crudely utilitarian view of the Corporation, and give due heed to the unanimous voice of artistic and architectural opinion. An argument which we have already used may be opportunely repeated. We ask the Corporation, and all practical-minded persons to whom purely utilitarian considerations make the most potent appeal, to make this a matter of bold finance, by seizing courageously an unexampled opportunity of acquiring a splendid asset for the Empire's capital; and, as a further concession to the civic mind, we take leave to insist that, in a great undertaking, disregard of the representations of "the men who know" is unbusinesslike to foolhardiness.

The Sphere in Perspective.

I N our issue of May 31st we published an answer to a question as to whether it was correct to represent a sphere in perspective by a circle; an answer which we had hoped was intelligible enough; but it appears that there are some people who cannot understand that Fig. 1, which shows the picture-plane as if it were canted, is exactly the same thing as Fig. 2, only put a different way on the paper for the sake of convenience. One correspondent, indeed, seems to be in such confusion of mind as to the actual relation of the picture-plane to the sphere and its pictorial delineation, that we will make another attempt to render the point clear.

A perspective drawing is a picture set out with reference to a certain assumed point of sight. If there is a sphere in the picture, the complex of rays from the sphere to the spectator's eye forms a cone, of which the eye is the apex. If, as in Fig. 3, the sphere is in the centre of the picture, so that the picture-plane cuts the cone at right angles to its axis, the image of the sphere projected on the picture-plane will





be a circle. But if, as in Fig. 4, the sphere is at one side of the picture, the cone of rays will be cut at an oblique angle by the picture-plane, and the image of the sphere will be projected on the picture-plane as an ellipse. As we said before, it is a simple matter of conic sections; an ellipse is formed by cutting the cone of rays obliquely, just as an ellipse is formed by cutting a material cone obliquely. The eye placed at the point of sight of the drawing will see that projected ellipse as the circular outline of the sphere.

Whether it is advisable to adopt the system in practice is another matter. We cannot fix the position of the spectator at the true point of sight (unless we make him look through a hole in a screen), and if he chooses to occupy the position of A in Fig. 4 he will see the drawing of the sphere as an ellipse, which will look bad. In fact, of course, no scientifically laid-out perspective is seen quite right except from the true point of sight; but as far as straight lines and plane surfaces are concerned, the distortion is not noticed; it is only noticed when an object which ought to be a true circle is distorted in outline. A large dome in perspective, for instance, may be quite correctly drawn from the assumed point of sight, but will often look entirely wrong when viewed from another standpoint. And therefore in regard to a sphere in a picture, such as a ball finial on a gateway, it would be better to draw it as a complete circle, unless it were at the margin, for instance, of a large picture which the spectator would naturally view from opposite the centre; then it may be better to modify its outline a little so as to appear right from the probable position of the spectator. Theoretically, the representation of the sphere by an ellipse is right for all cases where it is not exactly opposite the point of sight. Practically, it is a question of circumstances and the best pictorial effect.

The "Century of Art" Exhibition.

THE above title, given to a collection of pictures got together by the "International Society of Sculptors, Painters, and Gravers" at the Grafton Gallery, is a good deal too large for the subject, since it is certainly not a representative exhibition of the art of the last century. But it is nevertheless an interesting exhibition, and contains some examples of the work of painters who are rather forgotten at present; Géricault, for instance, whose vigorous little painting, "The White Horse," is a good specimen of his powers on a small scale. Géricault's great work was "The Raft of the Medusa," which ought to have been mentioned in the notice in the catalogue. The octagon room is chiefly devoted to French works, including one or two early works of Millet, surprisingly commonplace in comparison with those by which he is best known. Millet's early period, however, before he became the "Michelangelo en sabots," includes much better things than these. The room contains also a fine Corot, a capital piece of fruit-painting by Courbet, and a very fine example of Cotman.

The large gallery contains some well-known pictures which one is only too glad to see again; Holman Hunt's "Hireling Shepherd"; Watts's "Ariadne"; Burne-Jones's "The

Depths of the Sea," the man drowned by the mermaid (the mermaid was supposed to represent the Royal Academy); several examples (not very important) of Rossetti; and some among the most characteristic of Blake's works. There are a powerful landscape by Courbet; some good portraits by Raeburn, Hoppner, and Lawrence; and Rodin's fine statue "Age d'Airain," exhibited many years ago at the Royal Academy; a work of the period before he sought notoriety by eccentricity and by exhibiting statues half-finished or bereft of heads, arms, or legs.

In the centre of the gallery we are glad to see again Mr. Sargent's admirable nude study of an Egyptian woman, exhibited some years ago at the Carfax Gallery; and there is also one of the best of Mr. Strang's oil-paintings, "A Love Song." To many, however, the most valuable portion of the collection will be the drawings and studies in the end gallery. Among these are drawings by Ingres, Turner, Wilkie, Delacroix, Corot, Méryon, Rousseau, Ruskin, Fantin-Latour, and others. It is a most interesting exhibition, although, as already observed, it can hardly be said to justify its comprehensive title.

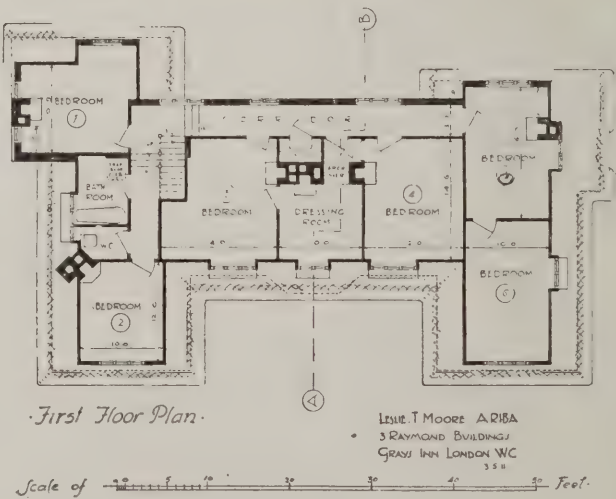
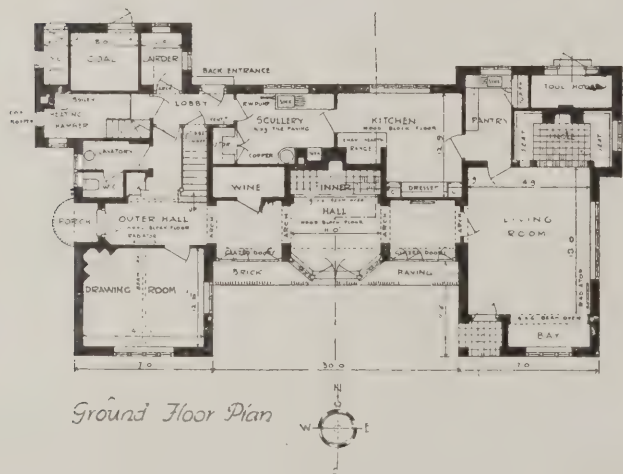
Regulations for Coronation Stands.

SOME interesting particulars concerning the design and construction of stands erected in London for the Coronation procession are given in the "Times" Engineering Supplement. In the City, drawings of proposed stands had to be submitted to Mr. M. L. Saunders, the surveyor in charge. The load, which is a vibrating one, is calculated at 1 cwt. per foot over the surface of the stand, this weight being arrived at by taking the weight of an average person at 1.25 cwt., adding .25 cwt. for the stand, multiplying by 2 for live load, and assuming that each person occupies a space of 2 ft. by 1.5 ft. Floor strength is regarded in the light of modern building practice, and the thrust caused by the weight of the stands is provided for and properly distributed. Dead shoring to the floors of old buildings is insisted upon where the upper floors are to be stressed beyond the normal. The thrust caused by the weight on stands is provided for in City practice by a timber plate fixed on the structure itself, the raking member of the stand being bird's-mouthed to it and the thrust thus distributed. The angle of slope of the stands is limited to 35 deg., and the general tendency is to get them as flat as possible.

The London County Council have no longer any rights of control over wooden stands, such powers being now delegated to City and Borough authorities; but the County Council still exercise supervision over steel erections, in each case on lines generally applicable to temporary steel structures.

An important area is that governed by the Westminster City Council. Many large stands, of which those at St. Martin's Church, St. Margaret's, and St. Clement Danes may be taken as examples, are being erected in this district, some providing accommodation for 3,000 spectators. In Westminster, as in the City, the regulations limit the angle of slope to 35 deg., and all wooden structures in front of buildings are required to be tied back at each pier with wrought-iron rods of at least $\frac{3}{4}$ in. section and passing from the front of the structure to good anchorage within the building. In addition, satisfactory longitudinal and transverse bracing is required, and all timber work must be of sound squared scantlings. Where the slope of the wooden structure exceeds 20 deg. guard rails have to be fixed at every fifth row of seats.

The regulations regarding stands which are being put into force by other authorities in London through whose districts the supplementary Procession will pass follow very much on the lines of those of the City of London and the City of Westminster, and inquiries made show that the local bodies are fully alive to the need for vigilant control.



"The Architectural Review,"
SOME notable issues of the "Architectural Review" are now being published. Last month a very fine series of photographs of the Royal Automobile Club and another series of the chief works of Carrère and Hastings formed the two main features. The June issue is equally interesting, though entirely different in character. Mr. Gotch writes on No. 25, High Street, Guildford—a delightful example of seventeenth-century work—which is illustrated by some excellent photographs. Another article accompanied by some very fine illustrations is one on flintwork. It would be a matter of considerable interest to trace the rise of the peculiar and distinctive flint-and-stone panelled detail of Nor-

folk and Suffolk (by some called "flush-work") of which the remaining examples are entirely of the Perpendicular period, and somewhat late in the style, earlier flintwork in East Anglia being similar to the more ordinary treatment usual in other counties. The later work exhibits a marvellous degree of skill and accuracy, the faces of the flints being knapped to an almost perfect plane surface, and in some cases (as at Old Bridewell, Norwich) truly squared as well. This superlative accuracy of workmanship in an intractable material is well shown in the charming south porch of Kersey, Suffolk.
The series of articles affording "New Light on Old Subjects" has this month for its subject the chapter-house of Cockersand Abbey, which, while it does not challenge com-

parison with the great structures at Lincoln and York, is yet a refined and beautiful expression of "Early English" art which has hitherto almost escaped notice.

Current architecture is represented by a noble Scottish house by Mr. Lorimer—"Rowallan," Ayrshire; houses at Sheffield and Wimborne by Mr. Edgar Wood and Messrs. Forsyth and Maule, respectively; the Berkshire County Hall, of which Messrs. Warwick and Hall are the architects; and a chair and pulpit at All Saints' Church, Ealing—the former designed by Mr. W. A. Pite, the architect of the church, and the latter executed by Mr. Nelson Dawson.

"The Practical Exemplar of Architecture" deals with the Jesus Almshouses at Bray (which Walker took as his model when painting that well-known picture, "The Harbour of Refuge," now in the Tate Gallery). Other articles deal with Gothic vaulting, Richmond Bridge, the Cour de Marbre, Versailles, and modern French sculpture; while particular interest centres on the series of special telephotographs of the Queen Victoria Memorial—far and away the best that have been published—representing in the most complete manner the sculpture of this much-criticised monument.

SOME CLIMATIC AND SITE PROBLEMS.*

BY ERNEST RICHMOND, LICENTIATE R.I.B.A.

BUILDINGS in Egypt stand in conditions for which it would probably be difficult to find a parallel elsewhere.

During the flood season their foundations are in water or in mud; and, after the Nile has fallen, on hard caked clay. The ground forming the bed upon which foundations rest changes, then, materially in character twice every year. Such changes do not take place without some effect upon the foundations; and, consequently, upon the superstructures of buildings. A good illustration of the effect of water upon the character of Egyptian soil was afforded by the case of buildings constructed upon uncultivated and unwatered alluvium, forming land which had not been irrigated nor subjected to the results of neighbouring irrigation for a number of years. After this land had been reclaimed, and, by means of pumps, thoroughly soaked with water, the soil expanded and the surface rose as much as half a metre; and, in so doing, wrecked the buildings. There is also an extensive range of temperature, not only between winter and summer, but between night and day. Further, the atmosphere of Egypt is remarkable for its dryness. The effect of rapid and frequent rises and falls of temperature is very marked. In the desert in Upper Egypt it is possible to hear the rocks splitting as the evening cools after a hot day, making a sound like pistol shots. Experiments have shown that the range of temperature in the middle of a wall three-quarters of a metre thick in Cairo may be 40 deg. Fahrenheit through the year; and that, during the daylight hours, while there was little change of temperature in the heart of the wall, there was a range of eight or nine degrees at a depth of 10 centimetres from the surface in July and August. If temperatures had been taken at night also the range for the whole twenty-four hours would certainly be found to be greater. But practical experience has proved more conclusively than experiment that under certain circumstances the changes of temperature may be such as to result in stresses greater than a wall can resist. Buildings in Egypt are, then, almost daily subjected to forces above and below ground which tend to bring about movements. Below ground the water level is continually changing; and above ground alterations in the temperature, even more frequent, are setting up stresses which are difficult, if not impossible, to calculate.

The structural problems before the builder in Egypt are by no means simple. Stability must be attained upon a founda-

tion bed which is lacking in that quality, and under temperature and atmospheric conditions which tend to the disintegration of the superstructure.

The original building material in Egypt was without doubt mud brick. This material is still used to a very large extent; and although, for important work, it has been replaced by stone and burnt brick, yet the traditional conception of walling derived from mud-brick construction has remained, throughout history, inherent in the Egyptian builder; and it is possible to detect through all Egyptian work—ancient, mediæval, and modern—the dominating presence of those ideas which originated from mud-brick construction. When the ancient Egyptians did make use of stone, they used it, structurally, in much the same manner as they had used mud brick.

In modern Egypt one of the most noticeable features in Egyptian methods of walling is the absence of bond. Builders will, if left to themselves, show little or no appreciation of its importance as a means of attaining stability combined with economy of material. In native practice, the materials most generally used throughout Egypt are burnt brick and mud brick. Rubble stone is also employed, but not to the same extent. This material is used principally in Cairo and Alexandria owing to the existence near these towns of conveniently situated quarries. The materials used for the composition of mortars are Nile mud; fat lime; the dust resulting from crushing burnt bricks (this dust is locally known as "homra"), sand, gypsum, and, lastly, a material known as "kosremil," which is the residue or ash of a fuel composed of street sweepings used for heating native baths. Nile mud contains a high proportion of silica; and it is thought by some that its use with fat lime is explained by the formation of an insoluble silicate of lime, especially if the mortar is kept damp for a sufficient time. The setting or hardening of mud and lime mortar is, however, a very doubtful as well as a slow process. The lime made from the quarries of Egypt is, for the most part, fat lime, and there is practically none other used, if we except imported limes. The homra, or brick dust, already mentioned, is an artificial puzzolana, and its use with fat lime gives a certain hydraulicity to mortar. Damp is required if the best results are to be obtained from its use. This material is much used in foundation work; and also, occasionally, for elevation walling; but, in the latter case, unless special precautions are taken to keep the masonry damp, the results of using homra are apt to be disappointing. Gypsum is used with ashlar work. A great deal of the ashlar of the mediæval mosques is set in a mortar into the composition of which gypsum enters; it is quick setting, expands on drying, and forms a tight joint preventing the escape of any mortar which may have turned to dust in the heart of the wall. The function fulfilled by kosremil, the ash of street sweepings, as an ingredient in mortar, is doubtful; it is thought by some that its presence adds something to the hydraulicity of the mortar; and, by others, that its virtue lies in the salts it contains, nitrates of soda and potassium. These salts keep the mortar in which they find themselves damp, thus preventing too quick drying in hot dry weather, an important point when fat lime and Nile mud form the other ingredients; for, if the mortar dries too quickly, it crumbles to dust instead of hardening or setting. If this explanation is the true one, the kosremil may be said to act as a substitute for watering, or as a device to ensure that, if watering is neglected, the mortar will not dry too quickly.

In demolishing Egyptian buildings it is found that the mortar in the heart of the walls is almost all turned to dust; unless, of course, gypsum has been used, but this is very rare owing to the expense. To build a 9-inch wall with such materials, and on such a soil, would be out of the question; and a 14-inch wall would be somewhat risky. The Egyptian builder does not attempt to do either; he builds a thick wall, rarely, if ever, less than half a metre thick. The surface of the wall is, when finished, provided with a rendering very generally composed of fat lime and sand. The object in view

*Extracts from a paper on "Building Methods in Egypt," read before the Royal Institute of British Architects, June 12th.



The external facings are of thin red King's Norton bricks with purple bricks for quoins, and roofs covered with hand-made tiles. The front door jambs, bay-window sills, and sundial are in mottled Hollington stone. Mr. Gerald McMichael, A.R.I.B.A., of Birmingham, was the architect, and Mr. John Webb, of Handsworth, was the builder.

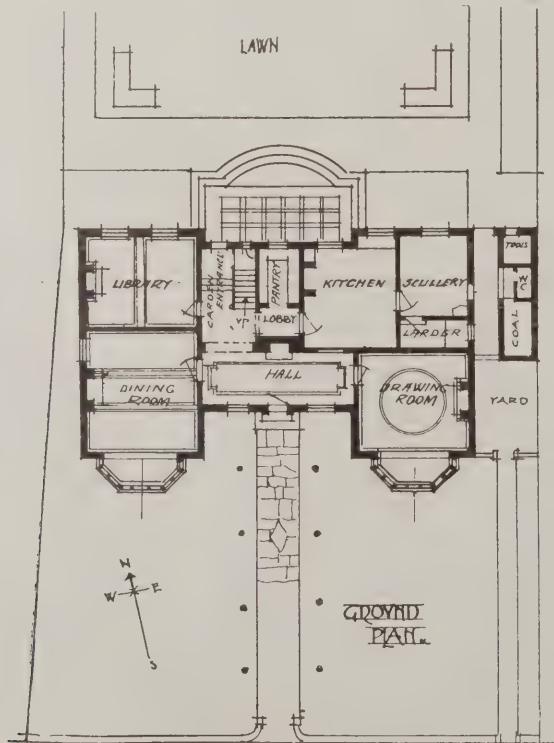
HOUSE AT MOSELEY, BIRMINGHAM. GERALD McMICAL, A.R.I.B.A., ARCHITECT.

is not only to improve the appearance of the building, but to fulfil a structural need, that of protecting the outer joints of the masonry from the destructive influence of the sun and wind. The joints would, in the absence of the protective rendering, become cracked and gradually destroyed, or, as

the native builder sometimes expresses it, the sun would "burn" the joints, and so prepare for the gradual collapse of the building owing to the escape of the dried and crumbled mortar in the interior of its walls, unless built so phenomenally thick as to be disproportioned to an ordinary building.

The main characteristics of a wall such as that described appear to be its elasticity and the capacity it possesses to adapt itself, in a certain measure, to movements, both those in the foundation bed caused by the rise and fall of the subsoil water, and those in the superstructure itself, caused by stresses set up by changes of temperature. The function of the timbers is to assist the bond; under opening they resist shearing stresses, acting as sills, and taking up the effects of unequal pressures which, without them, would in these positions be apt to cause cracks.

In the construction of buildings to meet European requirements, the raft of concrete has of late years been largely superseded by concrete piles. Holes about seventy-five centimetres across are punched in the ground by means of pointed weights dropped from a height. This results not only in forming a hollow shaft in the ground into which the concrete to form the pile is rammed, but also in compressing the whole of the area built over, and so in compacting the soil to a very marked extent. The ramming of the concrete into these hollow shafts causes the weight of the building to be distributed laterally as well as vertically. The tops of the concrete piles, which are spaced about 3 metres apart, are connected by beams in reinforced concrete, and on these beams the walls are raised. This method has given, on the whole, satisfactory results. Broad spreading foundations of reinforced concrete have also given good results. How far time will confirm the wisdom of choosing such methods of construction is a matter for conjecture and speculation. In view, however, of the local difficulties in getting trustworthy



HOUSE AT MOSELEY, BIRMINGHAM.

SYSTON COURT.

workmanship, it is difficult, as yet, to look with complete confidence on a system such as the reinforced concrete system, which depends, to so great an extent, on workmanship. Experience in Egypt has, however, brought, so far as the author is aware, no evidence against its use either in foundations or as a means of constructing the beams which connect the heads of concrete piles as just described. But it is clear that such a system should not be employed unless very special precautions in respect of supervision are taken. The desire to improve upon the loosely built and unsatisfactory native wall has brought about the use of mortars in which cements or imported hydraulic limes form the chief ingredients. Steel frame buildings are even beginning to make their appearance in Egypt, though it is too early to say with what result.

Modern materials and methods of construction make it possible to build so as to allow considerable intensity of stress to be safely exerted without fear of collapse, and wall and pier construction, thin and meagre when compared with former work, is now possible without danger, if the ordinary stresses caused by the weight of the building or by the loads it has to carry are alone allowed for. The work formerly done by a wall of rubble stone and fat-lime mortar 50 centimetres thick can now be done by a brick and cement mortar wall of half the thickness or, to take a more extreme case, by a reinforced concrete wall of only a few centimetres thick. Again, the work done by a steel floor with the jack arches can now be done by a thin slab of reinforced concrete. But such thin and rigid methods are not unattended by dangerous, or at least highly inconvenient, results in Egypt, owing to the temperature conditions; and it is a question yet to be answered, how far the modern tendency towards thinness and homogeneity of construction are applicable in that country. This question can only be answered by continued experiment and research.

GLoucestershire affords many examples of fine old stone-built houses, among these being Syston Court.

This venerable grey mansion, during the troublous sixteenth and seventeenth centuries, seems to have been left peacefully alone, whilst its more important neighbours were being rudely buffeted in the political vortex that raged from the time of Henry VIII. to the Restoration. Hence, Syston Court has little of history that is eventful, its tenants having been men who did not meddle much in affairs of State. The earliest associations of the place are with the family of the Walerans, Robert having been appointed Governor of St. Briavel's Castle, Warden of the Forest of Dean, and on four occasions representing Gloucestershire as its Sheriff in the reign of Henry III. On his decease the manor passed to his son and thence to Alan Plokenet and Sir Peter Corbet, the daughter and heiress of whom wedded Sir Gilbert Dennys.

It would seem that the present structure owes its origin to the family of Dennys, for upon the heraldic shields which adorn the stone panels of the two-storey bay windows of the south-east front the arms of the Dennys are carved in relief. But as to who was the actual builder and what was the precise date of erection, there is no record, though its general appearance indicates a period earlier than the Jacobean, local characteristics being very much in evidence. Perhaps the date of the building may be put at 1570, or thereabouts, in which case it would probably be Sir Walter Dennys, companion of Sir Richard Weston at the Field of the Cloth of Gold in 1519, and afterwards his son-in-law, who was responsible for this interesting relic of the sixteenth century. Colour is lent to this supposition by the great resemblance between Syston



SYSTON COURT: THE SOUTH-EAST FRONT.



SYSTON COURT: OAK-PANELLED BEDROOM.

Court and Sutton Place, and it is not improbable that the former was erected from designs inspired by the latter, which was built between 1520 and 1530.

There is an old engraving showing the house as it was in 1712, and from this one may see that the house has been very little altered. Then, as now, there was the square courtyard, although in Sir Robert Atkyn's time, when the engraving was made, it was enclosed by a wall centering in two tall urn-crowned pillars, between which a gate gave access to a flagged walk that led to the main entrance to the house. The immediate surroundings have, necessarily, changed greatly since the early part of the eighteenth century; for now a croquet lawn covers the space formerly occupied by the quaint avenue of flat-topped trees that led to the ancient gateway, and a well-stocked kitchen garden occupies the site of the old farm buildings.

The bays which project from the terminal walls of the south-east front are fine examples of Tudor work, and proof of the excellence of design and execution attained by the native artisan of the sixteenth century, as are also the cupola-topped octagonal turrets, the square chimneys, the ball-finial gables, and the two quaint gate lodges.

In the *coup d'œil* the south-east front would appear to be particularly well balanced, yet a closer scrutiny will reveal the fact that such is far from being the case. The porch, although placed centrally between two projecting twin bays, is not immediately beneath the apex of the middle gable, but considerably to the left of it. Also it will be noticed that the gables are not equally spaced, the distance between the central and left being much greater than that between the central and right, whilst that to the left is a little removed from the turret, though the opposing turret encroaches so much upon the gable

to the right as to cause it to be partially hidden. Furthermore, whereas one of the two longer windows on the first floor is midway between two gables, its companion shelters beneath that to the left; and the south-east wing, in addition to being narrower than its neighbour on the north-east, has its courtyard front projecting from one side of the octagonal turret, not from an angle, as the latter wing does. These and many other minor inexactitudes of balance suggest that the structure was based on no well-considered plan and that the exterior was dependent upon internal arrangement and convenience; and if such were the case, then an added interest is given to Syston Court, for just before Elizabeth's time architecture had begun to assume a more predetermined character, and few were the buildings erected after 1530 which did not follow some carefully conceived plan.

Internally, the architectural design is quite in harmony with the exterior, its chief features consisting of some beautiful panelled and pendant plasterwork ceilings of a style much in vogue in houses of this period, with linenfold panelling on the walls.

Syston Court remained in the possession of the family who had created it until 1598, when it passed by purchase to Sir Henry Billingsley—a man who deserves some consideration at the hands of the scholar, for he was the first translator of Euclid into English. He was succeeded by his son, who here entertained Queen Anne in 1613. From the Billingsleys the estate passed, in 1637, to Lionel, Earl of Middlesex, who sold it to Patrick Cary in 1650, the following year witnessing its purchase by Samuel Trotman, whose descendants remained in possession until 1835; the place afterwards becoming the property of Mr. F. B. N. Dickenson, from whose son it was purchased in 1903 by Mr. J. E. Rawlins.

THE ST. PAUL'S BRIDGE
CONTROVERSY.*Opposition to the Bill.*

The following memorandum, signed by members of both parties, has been sent to all members of Parliament:—

Dear Sir,—

CORPORATION OF LONDON
(BRIDGES) BILL.

The Bill for the building of a new bridge in the vicinity of St. Paul's Cathedral will come on for debate upon the third reading on Wednesday, June 14th, at 8.15, immediately after the Whitsuntide recess. A motion will then be proposed by Mr. Morrell, and seconded by Lord Claud Hamilton, to recommit the Bill; and if this motion is successful an instruction will be moved to the Committee not to agree to any scheme for the proposed new bridge until they are satisfied (a) that it has been prepared under architectural advice, and (b) that both in respect of architectural design and convenience of traffic it is the scheme best adapted to the needs of the public and the character of the site.

We now venture to send you

(1) A memorandum prepared by Mr. Beresford Pite, Professor of Architecture at the Royal College of Art;

(2) A resolution passed by the Council of the Royal Institute of British Architects,

giving some of the grounds on which the Committee for whom we act desire to secure your support of these motions.

The scheme, as it stands, while involving the expenditure of 2½ millions of money, misses altogether a unique opportunity of constructing a suitable approach to one of the greatest of our national monuments. It is also objectionable on the ground of traffic, as involving a direct right angle crossing in one of the most crowded parts of the City. It has not been prepared under any architectural advice. It is almost universally condemned by the leading artists and architects of the day.

We earnestly hope that you will be in your place on June 14 to support the motion for recommitment, in order to ensure that the Corporation, in administering the funds of which they are the trustees, may avail themselves of the best architectural advice, and so produce a scheme that shall not be unworthy of the capital of the Empire.—We are, yours faithfully,

Percy Alden (L., Tottenham).

J. Baird (U., Rugby).

(Lord) Henry Cavendish Bentinck (U., Nottingham, S.).

James Boyton (U., Marylebone, E.).

W. H. Dickinson (L., St. Pancras, N.).

(Sir) Alfred Gelder (L., Brigg).

J. A. Grant (U., Egremont).

(Lord) Claud J. Hamilton (U., Kensington, S.).

Philip Morrell (L., Burnley).

J. C. Wedgwood (L., Newcastle-under-Lyme).

I. H. Whitehouse (L., Lanark, Mid.).

T. Wiles (L., Islington, S.).

House of Commons, June 2.

Professor Pite's memorandum declares that artistic opinion is entirely opposed to the City Corporation's plan, and that the Press of all shades of political thought very largely support the vista scheme. Attached to the memorandum are a number of opinions of leading men, including Mr. John Burns, Mr. Ernest George, A.R.A., Sir L. Alma-Tadema, Sir Aston Webb, R.A., Sir G. Frampton, Mr. J. S.

Sargent, R.A., Sir T. Brock, R.A., Mr. Leonard Stokes, P.R.I.B.A., and Sir William Richmond, R.A.

The motion which Mr. Morrell will submit to the House is as follows: "That it be an instruction to the Committee on the re-committed Bill not to agree to any scheme for the construction of the proposed new bridge until they are satisfied, first, that the scheme has been prepared under the advice and supervision of a competent architect chosen from among the leading architects of the day; and, secondly, that the scheme, both in respect of architectural design and convenience of traffic, is the one best adapted to the public needs and to the character of the site."

The Case for the Corporation.

The Corporation of London has issued to members of Parliament the following "statement on behalf of the promoters in support of the third reading of the Bill":

"The Bill has been promoted by the Corporation after an exhaustive inquiry extending over some years into various schemes which have been devised for providing additional access between the City and the south side of the river, and it was only after very careful consideration that the Corporation came to the conclusion that the scheme now proposed by them was the best in the interests of the traffic which the bridge is designed to accommodate."

"The new bridge is laid out so as to cross the river at right angles, and the northern approach commences at the eastern end of St. Paul's Cathedral, in St. Paul's Churchyard, which it is proposed under the Bill to widen, so that the wide approach may be continued to the western end of Cheapside. The bridge and approaches will be 80 ft. in width, and will form an imposing thoroughfare dominated by the Dome of St. Paul's Cathedral, and will provide in a direct line a new north and south route for traffic, which would cross the east and west traffic through St. Paul's Churchyard at right angles. It has been arranged between the Corporation and the London County Council that, subject to the approval of Parliament, tramways shall be constructed over the bridge, and thence, by means of a subway, under St. Paul's Churchyard, and ultimately be extended under Aldersgate Street so as to join the existing tramways in Goswell Road."

"The scheme will be financed by the Bridge House Estates of the Corporation, and will therefore not involve any charge whatever upon the rates."

"The London County Council actively supported the Bill in Committee by sending their chief engineer to give evidence, and the Southwark Borough Council also sent witnesses to support the Bill. It was stated on behalf of the police that the position chosen for the bridge and approaches was the most suitable for accommodating the traffic, and the only opposition to the preamble of the Bill in Committee was from landowners, who objected to interference with their property."

"Various members of the Royal Institute of British Architects, however, have conducted a criticism of the scheme in the Press, and that Institute deposited a petition against the Bill. Although the Corporation were advised that according to the practice of the House of Commons the Institute was not strictly entitled to a *locus standi* to be heard against the Bill, the Corporation refrained from taking technical objection to the petition, as, following the course they had adopted in giving the fullest opportunities to the representatives of the Institute to express

their views when the consideration of the scheme was in its preliminary stages, the Corporation desired the fullest possible inquiry into the scheme, and were anxious that the views of the Institute should be considered by Parliament. The Institute, however, did not see fit to appear upon their petition before the Committee, but the Corporation brought to the notice of the Committee many of the criticisms which had been made against their scheme in the Press."

"The scheme which is believed to be favoured by the Institute is a scheme whereby the northern approach of the bridge would commence in St. Paul's Churchyard immediately opposite the south transept of the Cathedral. The chief objections to such a scheme are:—

"(1) It would involve taking the traffic from the south across the bridge to a dead end, and consequently the mingling for a short distance of the north and south traffic with the east and west traffic through St. Paul's Churchyard, a condition of things particularly objected to by the police."

"(2) It would also render impracticable the tramway scheme which the Corporation and the London County Council contemplate, as the carrying of the tramway in a subway round the foundations of the Cathedral on the south side, which slopes towards the river, is not a feasible proposition."

"(3) It would also involve the crossing of the river by a skew bridge, the demolition of important and exceedingly expensive property on the south side of St. Paul's Churchyard, and enormous additional outlay, which the Bridge House Trust could not bear."

"Although the bridge and approach proposed by the Corporation will not lead directly to the south transept of the Cathedral, an imposing vista thereof will be opened up throughout the whole length of the bridge, while the demolition of the block of buildings at the eastern end of the Cathedral will greatly improve the view from that end."

"The Committee closely examined the proposals of the Bill from every aspect and were satisfied that the scheme as promoted by the Corporation was the most satisfactory from the public point of view. After very careful consideration, the Committee reported that they found the preamble of the Bill proved, and their report included the following paragraph:—

"That the Committee were satisfied that the site of the new bridge had been determined with due regard to the relative position of St. Paul's Cathedral, and that while the fabric of the Cathedral would be preserved from interference, the bridge would accommodate the north and south traffic, and future tramway traffic, in the most satisfactory way, and at the same time, throughout the length of the bridge and its approaches, a vista of the Cathedral would be opened up."

"It is respectfully submitted that no possible reason exists for rejecting or recommitting the Bill, and the Corporation earnestly hope that the usual course may be adopted, and the Bill read a third time."

The following letter on the subject has appeared in the "Times":—

Sir,—It is now some months since you published a letter from ourselves and others on the subject of the proposal to build a new bridge over the Thames opposite St. Paul's Cathedral. In that letter we pointed out that such a scheme must inevitably leave an indelible mark

on the scenery of the river, and we pleaded that some assurance might be given that this great opportunity for increasing the architectural beauty of London would not be missed.

This plea has up to now been disregarded. The scheme which has been proposed by the promoters of the Bill, and agreed to, provisionally, by a Committee of the House of Commons, has no claim whatever to be considered as carrying with it any artistic or architectural authority. It was prepared, we understand, by the Consulting Engineer of the City, without reference to independent advice, and has never, so far as we know, been approved by architects of recognised experience. The only expert evidence called in support of this scheme before the Committee was the evidence of two other engineers and a surveyor. However excellent such a scheme may be from an engineering standpoint, it is plain that it has not yet received that full consideration for which we asked, and which a project of such importance, involving the expenditure of two-and-a-quarter millions of money, ought to receive.

Under these circumstances we venture to hope that the matter may yet be reconsidered. We understand that when the Bill comes on for third reading a motion will be made to recommit it on the grounds we have indicated; and we sincerely trust that the House of Commons, by adopting this course, will show themselves mindful of future generations, for whom they are the trustees, and do all that is possible to secure the formation of a scheme and the building of a bridge that may be worthy of the historic site.

We are, Sir, yours faithfully,

Ernest George, George Frampton,
Reginald Blomfield, John S. Sargent, L.
Alma Tadema, Thomas Brock, and John
Belcher.

June 2.

NEWS ITEMS.

A Church Restoration.

The parish church of St. Mary the Virgin at Welwyn, Herts, has been restored, at a cost of about £6,000, under the direction of Mr. C. J. Blomfield, F.R.I.B.A.

New Catholic Church, Eltham.

Messrs. Scholes and Raymond, of Basingstoke, have made application to the London County Council for permission to erect the new Catholic church on a site adjoining Eagle House, Eltham.

New F.S.A.'s.

Professor S. H. Capper, M.A., Director of the School of Architecture at Manchester University, and Mr. G. E. Halliday, F.R.I.B.A., of Cardiff, have been elected Fellows of the Society of Antiquaries.

An Immense Billiard Hall.

The Empire Billiard Hall at Manchester has recently been completed. It has forty tables on one floor, and is the largest of its kind in the world. The work has been carried out according to the designs of Messrs. Rigby and Phipp, A.R.I.B.A., architects, of Manchester.

The Excavation of Verulamium.

The South-Eastern Union of Scientific Societies, at its annual congress at St. Albans last week, passed a resolution placing on record its regret at the failure of negotiations between the Society of Antiquaries and the Earl of Verulam

concerning the excavation of Verulamium and expressing the hope that it may be found practicable at an early date to reopen those negotiations. A deputation was appointed to wait upon Lord Verulam in the matter.

A Professional Announcement.

Mr. W. H. Moon, architect, of 4, Parliament Street, Hull, states that in consequence of the dissolution of partnership heretofore existing between Mr. John Abbott and himself, he has opened an office at the above address, where he will continue to practise.

Alterations to Shop Premises.

Extensive alterations have recently been carried out at No. 74, High Street, Maidenhead (for Messrs. Neve Bros., outfitters), from designs by Mr. H. Stanton Webber, F.S.I., architect, 23, Queen Street, Maidenhead. The contractor for the general building work was Mr. W. Creed, of Maidenhead.

Madison Square Garden, New York, to be Built Over.

The destruction of Madison Square Garden is apparently assured, a company composed of British, French, and American capitalists having completed an organisation for acquiring the property and erecting on it a 25-storey business building.

A Memorial.

A memorial to the late Miss Sutherland has been erected in St. Peter's Church, Hammersmith. It takes the form of two painted panels by Mr. H. G. Murray over the reredos. The wall space around the panels is treated with pilasters and frieze, with colour decoration. The work has been carried out under the direction of Mr. A. O. Collard, F.R.I.B.A.

The Wellington Memorial in St. Paul's Cathedral.

At last there is good prospect of the speedy completion of the famous Wellington Monument in St. Paul's Cathedral. Mr. John Tweed's equestrian figure has been cast, the pediment is almost finished, and it is expected that the completed memorial will be placed in position in St. Paul's before the end of the year. It may be remembered that a model of the equestrian statue of the Iron Duke was temporarily shown on Alfred Stevens's monument early in 1908.

Crystal Palace as King Edward Memorial.

We have received, through Mr. W. J. Potter, member of the council of the King Edward National Memorial, a circular letter, in which Sir W. P. Treloar, Bart., a former Lord Mayor of London, makes an appeal to his fellow-Freemasons "to support the excellent scheme known as the King Edward National Memorial, and thus help to save the Crystal Palace and its grounds as a fine centre for recreation, amusement, and education." He adds that "if each Freemason will send something, the result is assured." The offices of the council are at 26, Shaftesbury Avenue, W.

"Wonderfully Good Tendering."

At the last meeting of the Hampstead Borough Council the seven invited tenders for the proposed alterations and additions to the Town Hall, Haverstock Hill, were considered. The tenders were sent in by the following firms:—J. Carmichael, £13,980; McCormick and Sons, £13,831; Ford and Walton, £13,765; H. Knight and Son, £13,749; Holloway

Bros., £13,350; Perry and Co., £13,255; Patman and Fotheringham, £13,183. The Mayor (Councillor W. Woodward, F.R.I.B.A., J.P.) remarked that this was wonderfully good tendering. The lowest tender, that of Messrs. Patman and Fotheringham, of Islington, was accepted. Mr. John Murray, F.R.I.B.A., is the architect.

Additions to the Oxford Union Society's Building.

A new wing has been added to the buildings of the Oxford Union Society. The accommodation includes a large library, writing and smoking room, billiard room, and steward's house. Messrs. W. E. Mills and John Thorpe were the architects. The new library is to be used as an addition to the existing library, which was originally built as a debating hall in 1856 and decorated by William Morris and D. G. Rossetti, whose beautiful paintings in distemper on a wall not properly prepared or dried are now scarcely visible.

Proposed New Bridge over the Lea.

The Committee of the House of Commons, of which Sir Luke White is chairman, recently passed the Bill of the Metropolitan Electric Tramways Company and ordered it to be reported for third reading. Under the powers of the Bill it is proposed to construct a new bridge, 40 ft. wide, over the river Lea at Forest Road, Tottenham, in substitution for the present timber structure, and to carry over it a light railway which, connecting with the tramways at Walthamstow, will make a complete through east and west system of communication between the counties of Middlesex and Essex.

Koh-i-Noor Pencils.

Among the "boons and blessings" to draughtsmen may certainly be counted the "Koh-i-Noor" pencil, manufactured by Messrs. L. and C. Hardtmuth, Ltd., whose London address is Koh-i-Noor House, Kingsway, W.C. Special processes, special materials, special experience accumulated during more than a century, combine in the production of a perfect pencil. Artists, architects, engineers, photographers, and all whose duties call for skilful use of the pencil find the "Koh-i-Noor," with its wonderful delicacy of touch, an invaluable instrument. The "Koh-i-Noor" is made in seventeen degrees, thus meeting every possible requirement. The "Koh-i-Noor" pocket propelling pencils—all fitted with Koh-i-Noor lead—combine the qualities of daintiness and usefulness, being made in a variety of pleasing designs.

OUR PLATE.

House at Shrubs Hill, Sunningdale.

This house, for Sir Joseph Savory, Bart., is now nearing completion. It occupies a fine site of nearly ten acres, from which there are extensive views to the south-west over Sunningdale Common. The house is faced with 2 in. red bricks, of varying shades, with a modillion cornice painted white, the roof being tiled, with the valleys worked circular. The hall is panelled to a height of 6 ft. The windows are fitted with iron casements (supplied by Messrs. Burt and Potts), and the heating is carried out by Messrs. C. P. Kinnell. Mr. Ernest H. Bullock, of 3, Raymond Buildings, Grav's Inn, W.C., is the architect, and Mr. W. Watson, of Ascot, the builder.



The architect of this ambitious building was J. Poe'aert. The work of erection was commenced about 1836. The cost of the building exceeded £1,750,000. The rotunda is ornamented with colossal figures of Justice, Strength, Law, and Clemency. The only adequate conception of the size of the building can be obtained by a ramble through the interior. There are 27 large court-rooms for the Supreme Courts of Belgium and other provincial, civil, and criminal courts of Brabant, while there are 245 other apartments for the judges and other officials, besides eight open courts. A great flight of steps leads from the vestibule to the spacious Salle des Pas Perdus. The vestibule is adorned with costly statues of Demosthenes, Lycurgus, Cicero, and Ulpian.

THE PALAIS DE JUSTICE, BRUSSELS.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

IN PARLIAMENT.

(By our Press Gallery Representative.)

Designs for Public Buildings.

In the House of Commons, Mr. Whitehouse asked whether in future the designs of architects other than the official architects would be invited when public buildings were contemplated, and whether the approval of the House of Commons would be obtained before the selected plans were carried out.

Mr. Dudley Ward, representing the First Commissioner of Works, said a large number of public buildings were always in course of erection in the great towns throughout the country, and it was found to be easier, better, and more economical that they should be designed and carried out as part of the regular work of the Office of Works. The practice had, however, not been uniform in the case of the most important buildings. It had been the custom hitherto to lay before both Houses of Parliament the plans of public buildings of national importance, whether prepared by the official architect or by an architect in private practice. There was no intention of departing from this custom.

Mr. Watt asked whether there was one official architect for the whole of the United Kingdom, or whether there was one each for England, Scotland, and Ireland.

Mr. Dudley Ward said there were more than one for England.

Architects for New Government Offices.

Mr. Noel Buxton asked for the names of the architects responsible for the new War Office and the new offices of the Local Government Board and the Woods and Forests Department; whether designs were invited from other than the official architect to the Commissioners of Works; and whether the approval of Parliament was obtained before the plans were put out to contract.

Mr. Dudley Ward said the new War Office was designed by the late Mr. Wm. Young, F.R.I.B.A. On his death the work was carried out by his son, Mr. Clyde Young, in association with Sir John Taylor K.C.B., of the Office of Works. The Local Government Board offices were erected on plans of the late Mr. John Brydon, F.R.I.B.A., and completed by Sir Henry Tanner, of the Office of Works, with the approval of an advisory committee of eminent architects, consulted by the First Commissioner of Works. Both Mr. Brydon and Mr. Young were selected from a panel of architects submitted to the First Commissioner by the Royal Institute of British Architects. In both cases their plans were exhibited at the Houses of Parliament before execution. The Office of Woods and Forests was not built under the direction of the Office of Works. It was designed by Mr. John Murray, the architect usually employed by the Commissioners of Woods for buildings in London.

Increasing Demand for Monuments.

Mr. Noel Buxton asked whether the First Commissioner of Works, in view of the increasing demand for public statues and large monuments in London, and the decreasing space available for them, would consider the rearrangement of Hyde Park Corner on a more rectangular plan, such as had proved a success at the Marble Arch, and the utilisation of the spaces so formed for statues or monuments, and whether he would ar-

range for a schedule to be made of places available for statues in London, so as to preserve some proportion between the ultimate number and the frequency of permits granted for erecting new statues.

Mr. Dudley Ward said the First Commissioner was afraid that there would be some real difficulty in making the space at Hyde Park Corner rectangular, but would be glad to receive from the hon. member a more detailed suggestion which could be entertained in its relation to the traffic and other considerations. With regard to the last part of the question, few such sites were under the control of the First Commissioner, but he would be ready to assist the various local authorities of London in compiling such a schedule.

Mr. Wedgwood asked whether the hon. gentleman would see that steps were not taken to turn London squares and streets into bad editions of Siegers-Allee, Berlin.

Mr. Dudley Ward replied in the affirmative.

Ancient Monuments.

An interesting White Paper (Cd. 5690) has been issued, giving details of the work done or requiring to be done in connection with ancient monuments under the care of the Commissioners of Works. As the inspector points out, the works range from a single standing stone to Dover Castle.

CONTINENTAL JOTTINGS.

New Works at Calais and Boulogne.

The Minister of Public Works is seeking the necessary parliamentary sanction for schemes having for their object (1) the reconstruction of the north-east jetty at the port of Boulogne; and (2) various improvement works at the port of Calais.

Annual Competition of the National Society of Architects.

The National Society of Architects of France has set, for the subject of its twenty-second annual competition, open to French architects or student-architects, an inexpensive dwelling suitable for Paris or, at choice, for some provincial city. Medals will be awarded for the five best projects, and the designs are to be delivered at the Hotel des Chambers Syndicales, 3, Rue de Lutèce, on September 14th.

Discovery of a Basilica at Pæstum.

An interesting and important discovery at Pæstum is announced. Not far from the three great temples, which are regarded as the finest remains of Doric architecture, a buried basilica has been revealed. Twenty large columns have been counted, and a statue of a Roman Emperor is among the finds.

Proposed Architectural Exhibition.

M. A. de Baudot, inspector-general of historical monuments, has called a conference in the architectural salon of the Société Nationale des Beaux-Arts, at which, after delivering an address on "Architecture and Decoration: Past and Present," he outlined his scheme for an exhibition to be held from January 5th to Feb. 5th, 1912, at the Grand-Palais. The aim of the exhibition will be to give a complete view of the present position of architecture and decoration, in all its practical, economical, hygienic, and artistic aspects, and to bring into closer touch all the elements of the art and

science of building, and into closer collaboration the representatives of its various sections. Of the committee, which comprises architects, decorative artists, and constructors, M. A. de Baudot is president, and M. Christie general secretary.

Salon Awards, Architectural Section.

The section of architecture of the Salon of French Artists has awarded the medal of honour to M. Henri Prost for his project for the transformation of the military zone of the city of Antwerp, and a series of studies of Santa Sophia and its surroundings during the sixteenth century, a work which represents many years of research, and is as remarkable archaeologically as it is architecturally and artistically. Medals of the first class have been awarded to Raoul-Jacques Brandon; Henri Robert Panis and Emile Brunet; medals of the second class, to John James Burnet, Armand Gueritte, Jean Lacoste, and Albert Gabriel; medals of the third class, to Marcel Camuzat, Maurice-Louis Pillet, Pierre-Louis D.-M. Chirol, Edwin Titcomb, and Jean Greppi.

A New Building Authority.

An endeavour is being made to reform the Conseil-Général des Bâtiments Civils. Complaints were made that insufficient care in the preparation of designs and specifications has resulted in departures, while works were in progress, from the original design, disparity between the plan and the execution, and, above all, excess of cost over the estimate. The remedy now provided is insistence on submission of all projects for State works to the Conseil Général des Bâtiments Civils, and any modifications while the works are in progress must receive the sanction of that body. A council having this power of control was created in 1795, but has gradually lapsed into ineptitude and inefficiency. The new authority is to comprise, besides official architects and other Government functionaries, two members of the Society of Civil Engineers of France, nominated by the Minister of Public Works; two members of the Chambers Syndicales du Bâtiment, nominated by the Minister of Commerce; and two members of the Conseil Supérieur du Travail. The architects foresee that the new procedure is sure to result in irksome delays, and they strongly resent the intrusion of the engineers.

The Reorganisation of Apprenticeship.

The apprenticeship question continues to receive attention. It is stated that of the round total of 900,000 apprentices, of whom 110,000 belong to Paris and 790,000 to the provinces, only 95,000 are undergoing courses of technical instruction. In Paris, only 19,000 are enrolled as students. At Limoges, the employers have resolved to establish a system of corporate apprenticeship. The apprentice's career in the workshop will be under surveillance, and certificates of efficiency awarded. The Lille Chamber of Commerce has put forward a series of conclusions that may be here usefully summarised:—(1) The atmosphere of the primary school ought to be so modified as to inspire taste and respect for manual labour, and the greater part of the closing years of school life should be devoted to practical lessons, and, if possible, to elementary manual exercises, with the object of affording clearer guidance as to the choice of a calling. (2) The law (that of March 30, 1910) which hampers the association of apprentices with workmen

in the course of employment should be suppressed. (3) The multiplication of trade schools should be avoided. Their utility is incontestable, but they should be reserved for the higher instruction of the specially fit, and should not be occupied in forming ordinary workmen. (4) The organisation of workshop apprenticeship should be encouraged, and, in certain selected industries, might even be rendered compulsory under pain of extra taxation. (5) Where necessary, chambers of commerce should create and control practical evening courses for apprentices who desire a more general knowledge than can be acquired in the workshop.

M. Louis Bonnier.

The Central Society, and the Society of Architects Diploma'd by the Government, have entertained at a banquet M. Louis Bonnier, who was recently appointed director of works of architecture for the city of Paris. About 250 persons were present, and the principal toasts were proposed by MM. Etienne and Dupuy, vice-presidents of the Central Society, and M. Defrasse, president of the Diplômés.

A TOWN-PLANNING TOUR IN GERMANY.

It will be remembered that last April a party of about forty persons, consisting mainly of architects, members or officials

of municipal bodies, and others who were more or less directly and professionally interested in the improved development of estates, left this country for a fortnight's tour in Germany, there to study, under the guidance of Mr. Ewart G. Culpin, secretary of the Garden Cities and Town Planning Association, what has been or is being done by German municipalities in housing and town planning. A brief account of the tour is published in the June issue of "Garden Cities and Town Planning."

Essen, where Messrs. Krupp have provided housing accommodation for 46,000 workpeople, was first visited. Herr Schmohl, the architect who has produced much of the best work, delivered an address to the party, who were also addressed, in excellent English, by Herr Homann, statistical director of the Association for the Promotion of Social and Mental Culture, which is one of the Krupp institutions. After inspecting the town in company with City Architects Schmidt and Heilegental, and Herr Georg Metzendorf, Margarethenhohe, a Bournville-like village, was inspected under the guidance of the gentleman last named, who is architect to the Margarethe Krupp Trust. Herr Schmidt gave also, at Essen, a lantern lecture on town-planning, in which he showed, by means of plans and diagrams, the very complete provision that is being made for the future development of the town.

Düsseldorf amazed the party by its cleanness and freshness in spite of the fact that it is in the midst of the black country. The magnificent Königs Allee

and the fine business premises built of reinforced concrete were greatly admired. At the Malkastern, or artists' clubhouse, the British Consul, who (with the Vice-Consul) accompanied the party on their tour round the town, and afforded them valuable assistance, explained in considerable detail the civics of German town planning, the incidence of taxation, etc.

At Cologne, Dr. Rehorst, who is the leading spirit in the movement there, was a most delightfully painstaking and instructive guide, and the drive through the ring streets and town woods was a revelation of realised ideals. A few miles from Cologne is the village of Gronauwald, started by Herr Zanders, who is at the head of a colossal paper-making factory. Here the workers are encouraged to become proprietors of both houses and land, but under such conditions as prevent re-selling and other forms of speculation which might destroy the spirit of the undertaking.

The party next visited Frankfurt, where City Architect Freuhwirth and Herr F. Weizlar gave all possible explanation and guidance. The leasehold system that has been adopted here seems to be somewhat too complicated to work very satisfactorily.

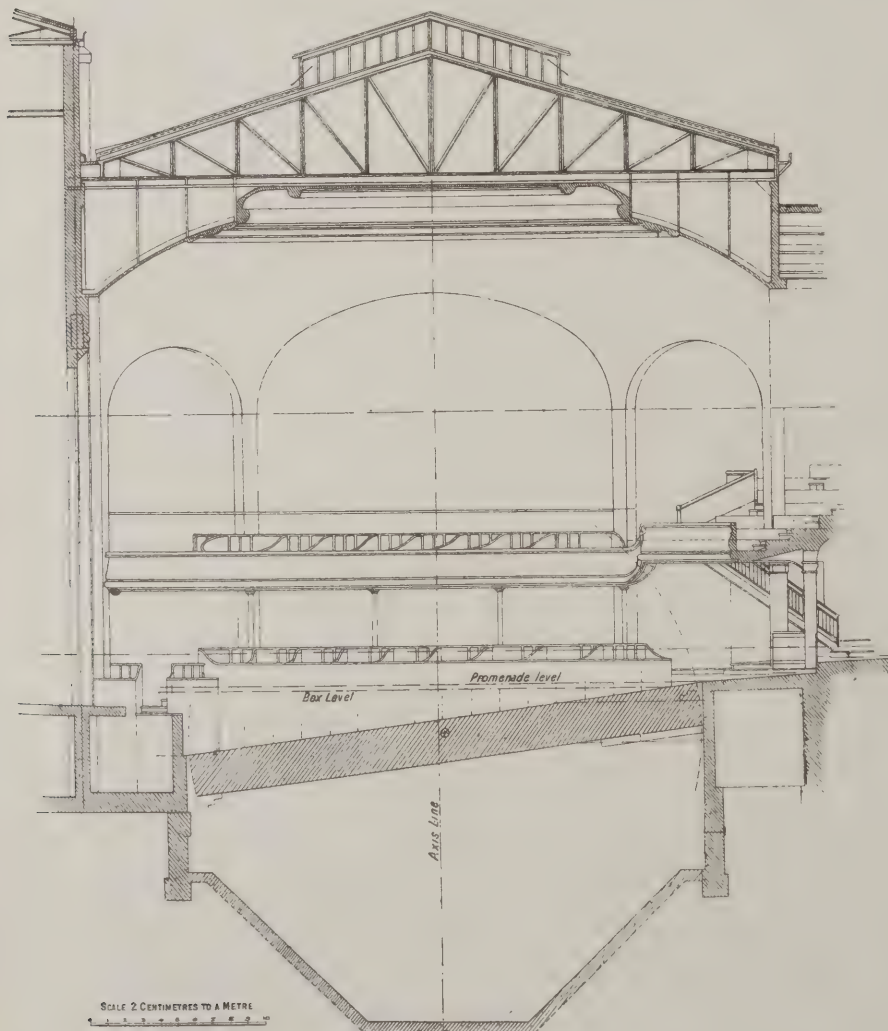
Mannheim, with its 136 rectangular squares, the party describe as "the most regularly planned city in Europe." Here City Architect Keil addressed the party in English, and showed how the new suburbs are being laid out, in the interests of taste and amenity, in accordance with very rigid restrictions as to the height of buildings and the amount of land which may be covered. In some of the newly formed estates, it is observed, "not only are plans prepared for the streets, but also for the houses, the speculative builder not being allowed to erect any class of buildings as he likes," and in the east of the town the erection of tenements or factories is prohibited. The corporation is "the biggest landowner in the town."

At Stuttgart, Ulm, Rothenburg, and Nuremberg the visitors were received with the same frankness and cordiality. Only a few of the party went to Dresden, in whose suburb, Hellerau, was seen the chief work of the German Garden City Association.

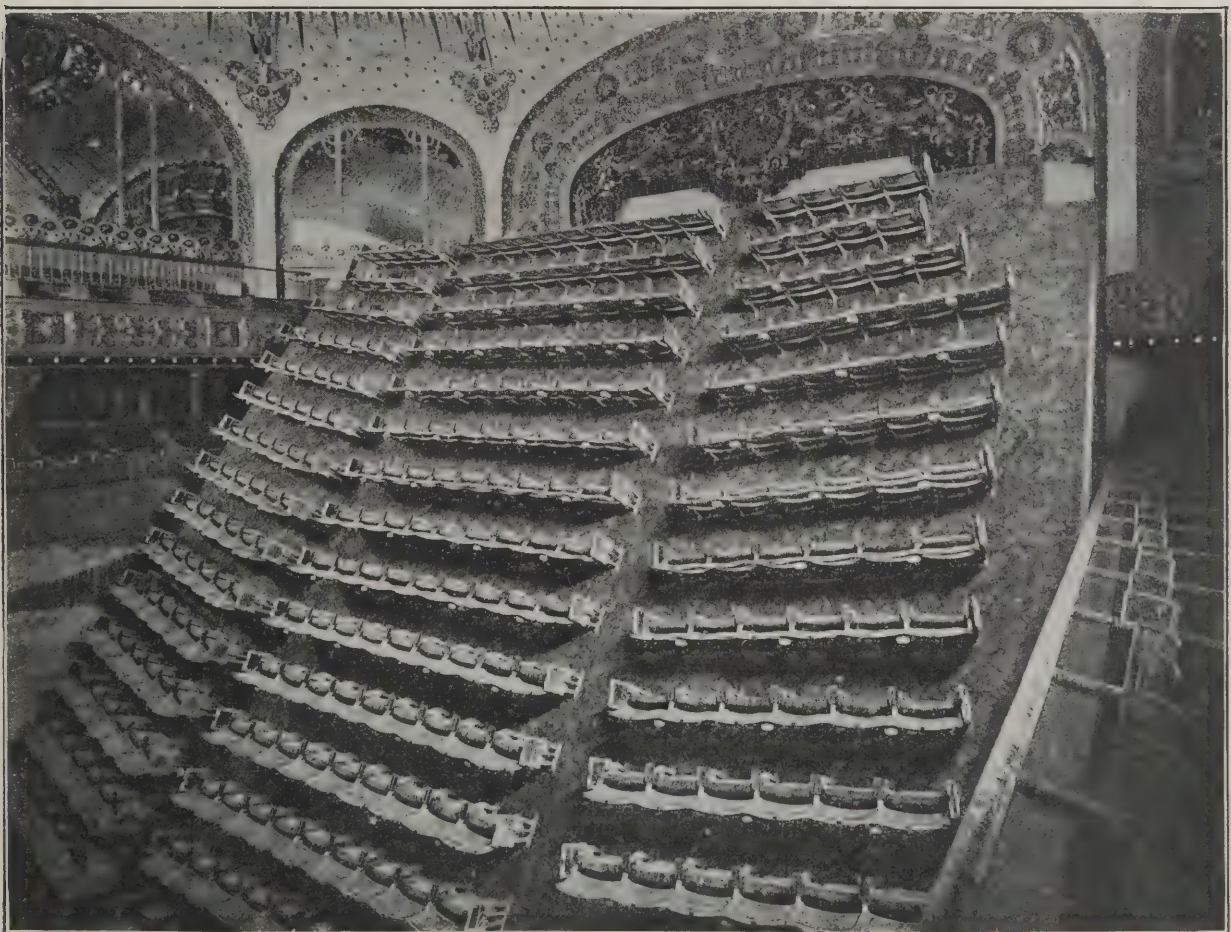
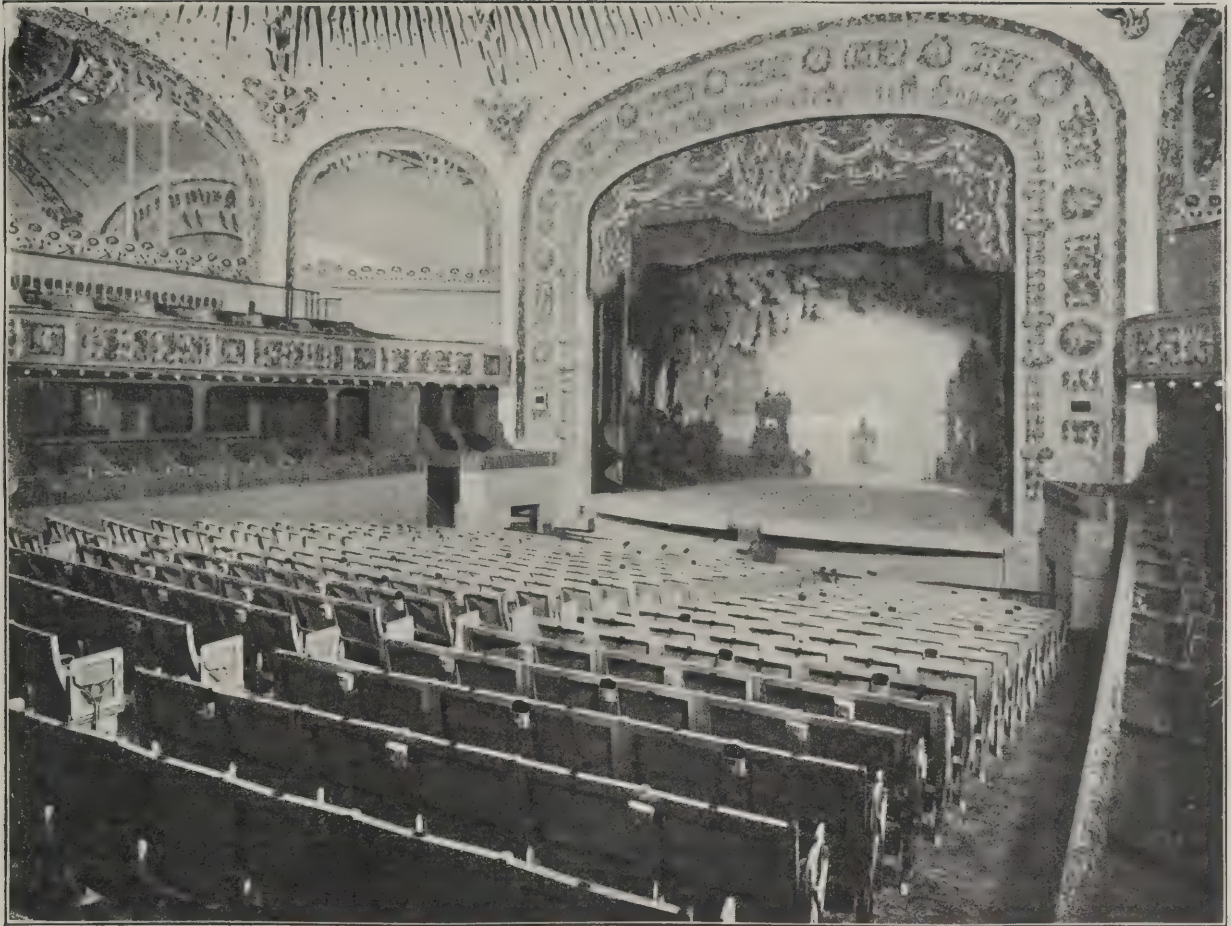
The general conclusion is that in Germany town planning is neither a fad nor a plaything; "it is a science, and every phase is considered scientifically." It is the housing of the working classes which excites the greatest attention, and perhaps presents the most difficult problem, the people being rather strongly predisposed to the barrack system. It is added that "the influence of English architecture is everywhere to be seen." It is gratifying to discover some slight set-off to our indebtedness to Germany.

A REVERSIBLE FLOOR.

The accompanying illustrations show a novel scheme which has been carried out in a Paris Theatre—the Apollo, No. 18, Rue de Clichy, the auditorium of which is used both as a music-hall and a ball-room. Monsieur J. M. Auburtin, the architect, had to provide a hall which would fulfil the dual requirements, and one, moreover, which could be quickly transformed as desired. The entrance in the Rue de Clichy leads into a hall in which are arranged the ticket offices, etc., and opens then into a large hall fitted as a café-bar. From every seat in this latter the stage can be seen, thanks to the height



APOLLO MUSIC-HALL, PARIS: SECTION OF AUDITORIUM, SHOWING PIVOTED FLOOR WITH EXCAVATION UNDER.



Views showing floor set for theatrical performance, and in process of being turned for use as a ballroom.

APOLLO MUSIC-HALL, RUE DE CLICHY, PARIS.

of the central balcony fauteuils. Beyond this "bar" is the principal hall, comprising a promenade, 20 boxes, 4 stage-boxes, and 380 fauteuils. On the first floor are another promenade, 31 boxes, and 160 balcony fauteuils.

The chief interest of the "Apollo" centres in the "basculo," or movable floor. This floor, built up of iron girders, has an area of about 278 sq. yds. and weighs about 100 tons. In order to accomplish the rapid transformation of the hall into a ballroom, M. Auburtin evolved the idea of mounting the floor so as to turn on a horizontal axle, and in this way to substitute for the 380 fauteuils on an incline a well-polished horizontal floor convenient for dancing.

The axle is not in the middle of the thickness of the floor, but at a point nearer the surface on which the fauteuils are mounted, the weight not being equal on each side. The whole is worked electrically by a 6 h.p. motor, the floor dipping into an excavation more than 30 ft. deep. In order to make this excavation, the walls of the adjoining buildings had to be pinned up.

The "basculo" is kept steady partly by its axle, and also, for greater security, by large bolts placed in the angles. There are four bolts for each position.

When the hall is used as a ballroom the level of the promenade is reached by steps, and the orchestra is placed on the stage, which is on the same level as the floor of the "basculo."

The cost of the floor alone was £2,200, the work of excavation and underpinning, machinery, etc., amounted to £3,600, while the total cost of the music-hall, building and installation complete, was £28,000.

ENQUIRIES ANSWERED.

Concrete Tennis Court.

L. and H. write: "A lawn tennis court was recently made in Portland cement concrete which has dried almost white, with the result that when the sun is shining the glare is so strong as to make play almost impossible. Could you recommend any treatment which would alter the colour of the surface? We thought that a better result might be obtained by treating the surface with some coloured silica solution, which would perhaps penetrate into the substance."

—We do not see quite what our correspondent is to do to colour the cement concrete tennis court with any degree of permanency, because the concrete paving is doubtless impervious to water. We can only suggest that a solution of silicate of soda and lamp-black or other colouring matter, preferably mineral oxides, should be applied to the surface; this being the kind of preparation which is used on blackboards.

D.

Stability of Timber Structure.

A correspondent writes: "I enclose a rough tracing of a roof truss [not reproduced] designed for a cheap building. Kindly inform me whether the timbers could be made smaller with safety. The trusses are to be 10ft. apart for a room 60ft. by 25ft. The building is of timber with a boarded and tiled roof. The bays between supports are taken up by windows (below wall plate), rendering bracing between the posts practically impossible. (1) Is it possible to do away with 3/4 in. iron flitch plate between the two 8 in x 4 in. deals? (2) the roof being hipped, would

you advise a post and tie in the centre of the end wall? If so, would additional stiffening and ties be necessary to the angles, and how could they be obtained without showing below the collars?"

—Allowing a structural load of 28lbs. per ft. sup. and a normal wind pressure of 28lbs. per ft. sup., the frame diagram with loads will be as Fig 1, and the corresponding stress diagram as Fig. 2. The calculations will be as follows. For the principal rafters with a maximum compression of 128 cwt. and an unsupported length of 6ft. 9ins. try a 9in. by 6in. section, then

$$W = \frac{FS}{1 + \frac{m}{nq} \left(\frac{l}{d} \right)^2} = \frac{6 \times 54}{1 + \frac{2.5}{1 \times 250} \left(\frac{81}{6} \right)^2} = 115 \text{ cwt.,}$$

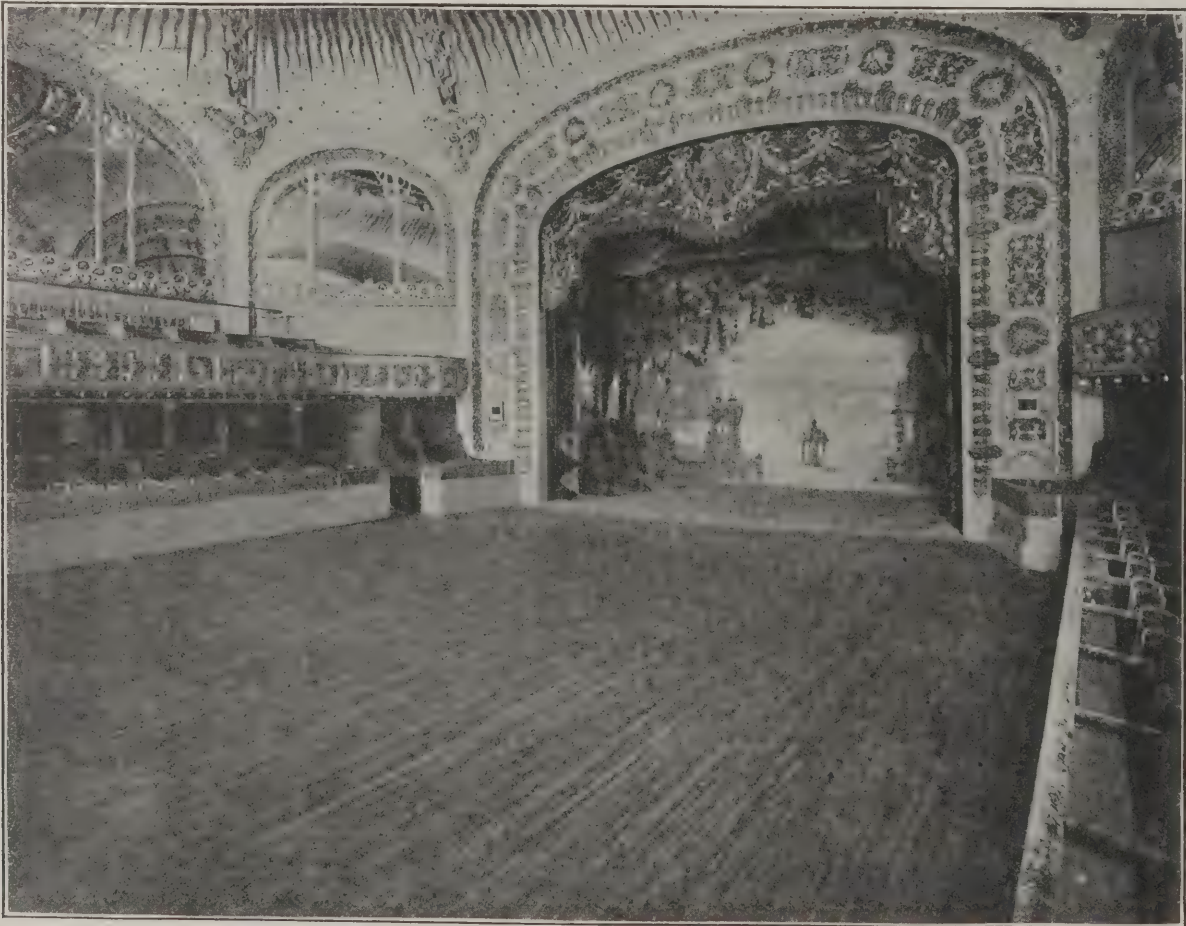
which is rather low, but may do, so that at any rate the 6 in. by 4 in. section proposed by querist is not enough. The collar has a compression of 53cwt., and an unsupported length of 6ft. 3in. Try the 8 in. by 4 in. section proposed, then

$$W = \frac{6 \times 32}{1 + \frac{2.5}{1 \times 250} \left(\frac{75}{4} \right)^2} = 43 \text{ cwt.,}$$

which is insufficient so that the section should be made, say, 5 ins. by 6 ins., which will be stronger because of the increase in least width, although the sectional area is smaller. The lower ties have a maximum tension of 110cwt., and allowing 5 tons per sq. in. for wrought iron, the rods will require an area of

$$\frac{110}{5 \times 20} = 1.1 \text{ sq. in.}$$

at bottom of thread, say 1 3/8 in. diam., instead of 1 in., and the king rod will require an area of



APOLLO MUSIC-HALL, PARIS: THE FLOOR REVERSED FOR DANCING.

BUILDING INTERESTS IN
SOUTH AFRICA.

Johannesburg, May 8th, 1911.

The National Federation of Master Builders in South Africa is growing in strength and influence. This was self-evident at the Seventh Annual Congress, which was held last month at Bloemfontein, when many important questions were discussed. Some of the subjects were similar to those which are familiar in England and on the Continent, such as industrial disputes and strikes, but there was one that belongs particularly to South Africa. Labour troubles are complicated here by the fact that we have coloured unskilled workmen competing with the white artisan, and running him pretty aggressively in certain trades. The building trade has been invaded, but action has been taken, and the black youth is not encouraged to compete in the future in first-class work. The whole matter will probably be dealt with by a Commission which will be appointed by the Government, and on which the National Federation of Master Builders will be represented.

Federation Affiliations.

The South African Federation has decided to become affiliated with the National Federation of Building Trades Employers of Great Britain, and also with the International Federation of Building and Public Works Contractors, a newly combined organisation cementing the building trade of the principal European countries. This was decided by unanimous agreement. The suggestion to become affiliated with these two important bodies was originally made by Mr. Jas. T. Brown, the general secretary of the S.A. Federation, and was brought about through his recent visit to England and the Continent.

Arbitration Court.

The Industrial Disputes Act has not worked well in the Transvaal, and it is stated that it is to be applied to the whole of the Union Colonies. As a Conciliation Board it has not led to a cessation of strife between employer and employee; rather has it given the latter further opportunities for harassing the masters and putting them to unnecessary trouble and expense. The stonemasons and bricklayers of the Transvaal have both had a trial of this game, but the master builders have won on each occasion. It was the usual question of fewer hours and more pay.

Trade Active.

Building continues active throughout South Africa, and especially in the Transvaal. Pretoria Municipality is raising a loan of one million sterling for public works, and much of this will go in buildings. Johannesburg is also continuing to enjoy its share of prosperity in the building line, and contractors are being kept busy not only with the work already in hand, but with new contracts. With a new town hall in prospect, the foundation stone of which has already been laid by the Duke of Connaught, and with an Art Gallery coming forward for erection, besides the extensive Law Courts, and other important buildings now in progress, there is nothing to fear for the future.

Durban and Maritzburg.

Reports from Dublin show that the building trade there is brisk also. The erection of a new Technical Institute and the conversion of the old Town Hall into a New Post Office, besides a good deal of

building going on at the Ocean Beach, all tend to keep trade humming. In Maritzburg the operations at the New University are going ahead rapidly, and the building has reached the height of the first floor. This will be a magnificent structure when completed, and will thoroughly establish the Provincial City as one of the chief educational centres in the Union. In this connection it is interesting to note that the last specimen of the oldest type of Dutch house in Maritzburg has disappeared as a result of the advance of education. The exigencies of the new girls' school have necessitated its removal, and nothing now remains of the old green brick dwelling, with its erstwhile red-tiled roof, and the foundations on which it stood. The house was built in the fifties of last century in a portion of the town which was then its fashionable residential quarter.

Port Elizabeth Prospects.

In Port Elizabeth the prospects are also good, and several fairly large contracts have been going during the month. The South African Association in Main Street is having practically new premises erected, and excellent residences are being built in various parts of the town, but especially in Cape Road.

Capetown Busy.

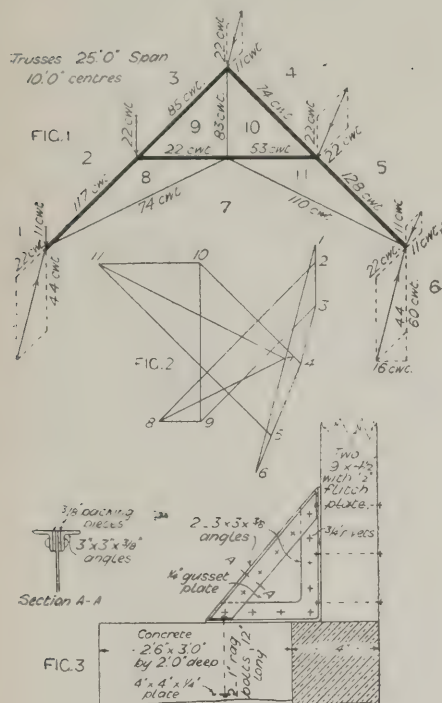
Capetown contractors also have no reason to grumble at present at the quantity of work they have on hand in the town and the suburbs. Some £20,000 is to be spent on the present railway station, and in constructing additional sidings. This is only the beginning of a comprehensive plan of reorganisation, the completion of which will probably involve an expenditure of three-quarters of a million sterling.

Union Imports.

The following are a few figures relating to British imports to the Union of South Africa during the past three months, compared with the corresponding period in the three months of 1910:—Girders, beams, joists, etc. (including framework of iron buildings), value £22,247, compared with £19,738 in 1910. Galvanised iron, not corrugated: 1911, £14,524; 1910, £17,241. Galvanised iron, corrugated: 1911 £93,103; 1910, £82,334. Teak wood: 1911: £3,701; 1910, £3,730. other manufactured wood, 1911, £174,223; 1910, £127,980. Flooring and ceiling: 1911, £51,263; 1910, £32,786. Other planed and grooved: 1911, £11,149; 1910, £5,296. It will be seen from these figures that there have been substantial increases in nearly all the items.

NOTABLE NEW FOREIGN
MONUMENTS.

A monument to the painter Kanner has been unveiled at his native village, Bernwiller, Alsace. It is the work of the sculptor Enderlin and the architect G. Umdenstock.—The monument to be erected at St. Petersburg to the memory of the Grand Duke Nicolas is to be executed by the Italian sculptor Canonica. French, Germans, and Italians competed.—A monument to the memory of Pierre Charles L'Enfant, the French architect who prepared the great original plan of the city of Washington, and who had a very considerable formative influence on American architecture, has been inaugurated in the Arlington Cemetery, Washington. It is a tardy recognition of his genius; but better late than never.



$\frac{83}{5 \times 20} = 0.83 \text{ sq. in. say } 1\frac{1}{4} \text{ in. diam.}$
As there is no connection between the posts and wall, a bracket as in Fig. 3 must be added, and the fitch plates, must be turned the other way, as they are of no value in their present position. The bending moment on the upright at top bolt of bracket will be produced by the 16cwt. from roof acting at the top or 8.5ft. from bolt, and $8.5 \times 10 \times \frac{3}{8} = 32 \text{ cwt. acting at } \frac{8.5}{2} = 4.25 \text{ ft. from bolt.}$ The equivalent total force acting at the top would then be $16 + \frac{32 \times 4.25}{8.5} = 16 + 16 = 32 \text{ cwt.}$

The formula for calculating the section of post will now be

$$W = \frac{d^2}{4L} (Cb + 30t)$$

where W = breaking weight in cwts. at end, d = depth of beam in inches, L = span in feet, C = constant = 3.0 for fir, b = total breadth of timber in inches, t = thickness of fitch plate in inches. Trying the section proposed by querist

$$W = \frac{8^2}{4 \times 8.5} (3 \times 8 + 30 \times \frac{3}{8}) = 66 \text{ cwt.}$$

which gives a factor of safety of just over 2, which is not enough. Try two 9 in. by $4\frac{1}{2}$ in. section with a $\frac{1}{2}$ in. fitch plate, then

$$W = \frac{9^2}{4 \times 8.5} (3 \times 9 + 30 \times \frac{1}{2}) = 130 \text{ cwt.,}$$

which gives a factor of safety of $\frac{130}{32} = 4$,

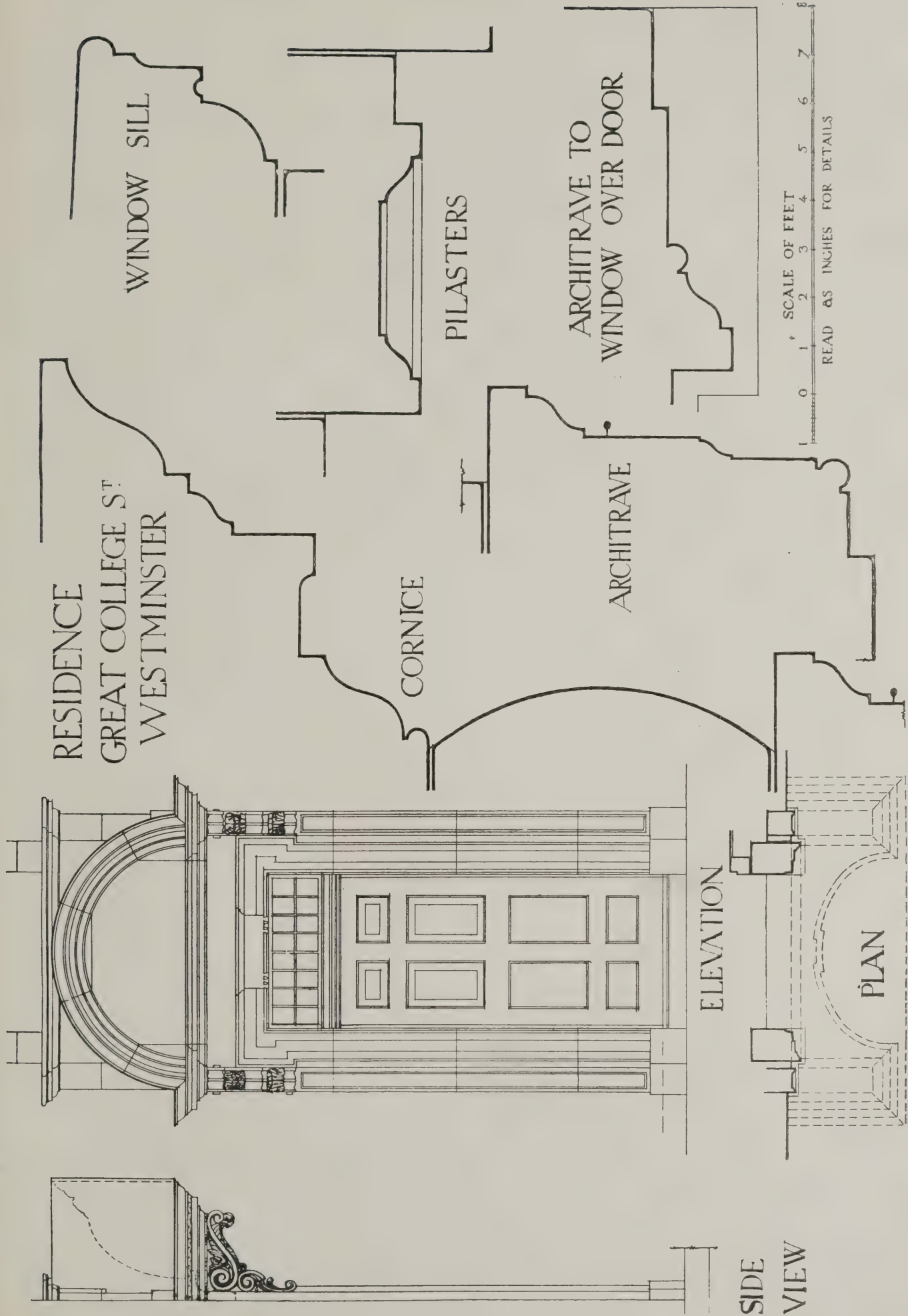
so that this size will be just sufficient. The bending moment at base to be resisted by the bracket = $16 \times 10 + 10 \times 10 \times \frac{3}{8} \times \frac{10}{2} = 347\frac{1}{2}$

cwt.-ft. = 208.5 ton-inches, which will be resisted by the bracket shown, and the concrete must be added as a foundation to the bracket to resist the thrust on the windward side, and the pull on leeward side. As regards the design generally, there is no ventilation shown, and no fixing for the base of posts. The design as shown by the calculations is already too light. For the hipped ends a half truss with three half tie rods may be used, or two hip trusses and half tie rods.

HENRY ADAMS.

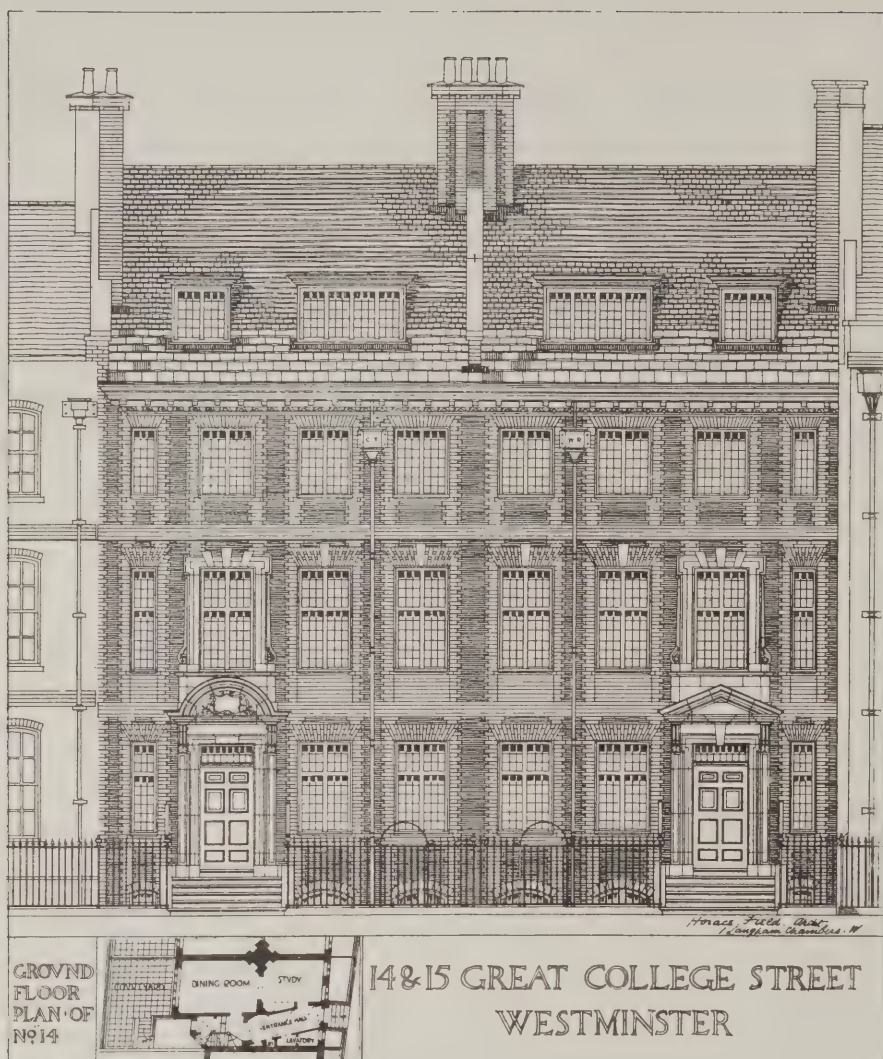


DOORWAY TO NO. 14, GREAT COLLEGE STREET, WESTMINSTER. HORACE FIELD, F.R.I.B.A., AND
SIMMONS, ARCHITECTS.



RESIDENCE
GREAT COLLEGE ST.
WESTMINSTER

HORACE FIELD, F.R.I.B.A., AND SIMMONS ARCHITECTS.



DETAILS—OLD AND NEW.—XII.

*Doorway, No. 14, Great College Street,
Westminster.*

Mr. Horace Field's work carries on the English Renaissance type of design, and in the present example a very pleasing result has been achieved. The doorway is perfectly straightforward in its arrangement, and the enrichment is just sufficient to give relief and character without ostentation. It is eminently a doorway which will gain in appearance as years advance and the stonework mellows. The horse's head within the hood was modelled by the architects' client and carved by Mr. Aumonier.

CORRESPONDENCE.

Cause of Decay in Stone.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—May I be allowed through the medium of your columns to draw the attention of those interested in the supply, use, and preservation of building stones, to the efforts of an International Committee to collect information in order to determine the various causes producing decay in stone, more particularly the effect of mortar on deterioration?

The Committee, which is composed of members of the International Association for Testing Materials and the labours of which are officially recognised by the Royal Institute of British Architects, held a meeting last October, under the presidency of Prof. van der Kloes, and made some careful investigations of the stone-

work of many important buildings, including Cologne Cathedral, under the guidance of its architect, in Holland and Germany. As a result of this meeting a series of questions has been circulated among those interested, with the object of collecting such information as may lead to a proper understanding of the problems connected with the decay of stone under varying conditions.

Many of your readers must possess information, gained by experience, which would be of great value to the Committee, and I venture through your courtesy to appeal to them to give any particulars which may be at their disposal or to preserve the list of questions appended with a view to the possibility of future assistance.

It is only by the collection and subsequent digestion of a great number of facts that satisfactory theories can be formulated, and without private assistance in a matter of this kind it is almost impossible to get the requisite information, which is necessarily largely in private hands. I may add that the response to a similar appeal abroad has been very encouraging.

The following are the questions, to which answers, even of a fragmentary nature, will be of value:—

1. Nature of building.
2. Situation (e.g., address, nature of surroundings, aspect).
3. Material (e.g., kind of stone or brick).
4. Date of building (or part under discussion).
5. Mortar used (e.g., composition,

proportion of sand, analysis or means of obtaining the same).

6. Nature of defect (e.g., incrustation, surface scaling, efflorescence, loosening, bulging of half-brick thickness).

7. Suggested cause (e.g., percolation of water, frost, defective stone, brick, or mortar, old bond timbers, smoky atmosphere, action of sea water).

Any details (which will be treated as confidential if so desired) should be sent to the President of the Committee, who has long been an enthusiastic worker for the benefit of stone users, Prof. A. J. Van der Kloes, Delft, Holland, to me, or—with your permission—to you, Sir, for publication.

ALAN E. MUNBY.

Hon. Sec., R.I.B.A. Sci. Com., member of above Intern. Com., 28, Martin's Lane, E.C.

Specification English.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—From a specification recently sent us, we submit the following paragraphs as being hard to beat:—

"The contract to comprise the execution of the various works required, which are shown, *or to be shown*, on the drawings as prepared at present *or* as may be prepared hereafter and supplied by the architect."

"Cement (mortar) to be mixed in equal proportions with clean sharp sand, i.e., *one* of the former to *two* of the latter."

The underlining is ours.

Lancashire.

BUILDER.

OBITUARY.

The Late Professor Michaelis.

The recent death of Dr. W. Michaelis has removed a notable figure in the domain of chemical industry, and the cement trade of Europe has lost one of its most active leaders, says the "Times." Michaelis was responsible for the data for the German official specification for Portland cement, and to his researches cement manufacturers throughout the world are indebted for many of the most important theories concerning the induration of cements and the chemistry of cement action. Recently he had been much engaged with certain physical aspects of the setting of cements. He was a frequent contributor to the "Proceedings" of the Institution of Civil Engineers, and he watched the progress of this country and America in cement matters with constant interest.

Electrical Trade Enquiry.

A series of articles of great interest to the electrical industry is now appearing in "The Electrical Engineer." There are more than £400,000,000 invested in electrical enterprises in this country, and for some years past the earning power of this capital has steadily declined. This decline is admittedly due, in part, to the stress of foreign competition, but in order to ascertain what other causes are at work "The Electrical Engineer" began three months ago to send out about 9,000 sets of enquiries to engineers, manufacturers, contractors, and merchants all over the country, and the authoritative information thus collected is now in course of publication. The writers include the heads of practically all the great electrical firms in the kingdom, and they put forward in detail many valuable suggestions with a view to improving the condition of the trade.

THE STREET OF TO-DAY AND TO-MORROW.*

By GUY WILFRID HAYLER, M.Inst Mun.E.,
M.R.San.I.

The Street of Yesterday.

ROADS there have always been since prehistoric times, for man as a nomadic animal always desired to reach from one point to another as readily as possible. The beating of a track through the primæval forest, or over the moor, was possibly the first suggestion of what is now the modern street. Continuous traffic, the carrying of heavy loads, etc., incited the idea of a permanent highway, first composed of rough logs or stone, and then developing into a thought-out formation. The old civilisations of India, Egypt, Greece, and Italy had their fine main roads over vast stretches of country, and the Romans have left a legacy behind them as the greatest of road makers of the ancient world. To carry their roads the most direct route, they not only overcame great engineering difficulties by piercing mountains and throwing bold arches over rivers, but on a scientific basis they laid the foundation of the art of road making. Roads came before cities, and not until the few congregated houses had developed into the city by long stages and through many eras, did the street as we know it arise. In the cities of ancient and mediæval times the street plan was rarely treated with artistic regard, large outlook or firm grasp, except perhaps in the instance of Piræus, which, as the seaport of Athens, was laid out by Athenian engineers. Blind, tortuous, and narrow streets were the rule in them, relieved now and then by splendid temple or palace and noble squares. It has remained for modern times, with great traffic and building considerations to grapple with, to insist on street reforms. A sense of the civic responsibility has been aroused by the unseemly conditions prevailing, and out of this the passing of the Town Planning Act of 1909 in our own country may be considered as the forerunner of further legislation to secure to the municipality and the State the right of control in matters which have previously either been left to chance or else allowed to fall into the hands of those whose sole interest is land and property exploitation.

Originally each resident swept his portion of the street, that portion which lay in front of his premises, and up to 1853 this was actually the custom in Paris.

The street as a traffic artery is a subject which has come to the front enormously in recent years, owing largely to the great increase of self-propelled vehicles. At the end of 1910 there were no fewer than 218,680 vehicles of this description registered for use in the United Kingdom. Besides the effect they produce on the road surface, their effect on traffic conditions is one warranting deep inquiry. The chaos in the streets caused by fast motor traffic and slow horse traffic is only likely to remedy itself by the elimination of horse vehicles altogether. A system of recognised stopping places for omnibuses, together with the abolition of all obstacles in the street area likely to impede traffic, would be welcome reforms.

One of the most important developments in considering the street of to-day is the idea that the street is a fitting place for the erection of all the various useful accessories of our modern life. But it is not easy to see how we can expect good

traffic facilities in our streets when we continue to allow them to be the dumping ground of all sorts of posts, poles, pillars, kiosks, refuges, boxes, etc. For instance, in narrow thoroughfares it would surely be better to dispense with massive electric light standards and connect the cables by suspension wires to rosettes on the houses. Local authorities have not power to regulate the erection of telegraph and telephone poles by the authority of the Postmaster-General, and this leads to their being put up very often in main roads, when subsidiary streets would have done equally well. Poles of all descriptions, fire alarms, ambulance sheds, ladders, fire escapes, etc., should be grouped together, either in a wide open space, or else provision should be made for them in special buildings. Hydrants, street orderly boxes, and sand boxes might easily be sunk below the roadway, inside the street area. The elimination of these various obstacles to traffic from the main thoroughfares of London would greatly assist in solving traffic difficulties.

At the present time we find it absolutely necessary to have refuges for foot passengers in the centre of the streets. It is argued that they separate the two streams of traffic. This is probably true, but they do not facilitate easy locomotion. If underground difficulties in the shape of pipes and sewers render a subway under the road impracticable, they must, of course, be tolerated, but it would surely be better to dispense with them wherever possible, because to be of much service they are obliged to be of a good size. Where they are unavoidable they are better if designed as islands, rather than as a long strip, thus allowing of cross-traffic to and from streets on the opposite side of the roads. If they have a good high kerb above the street, and are guarded by iron posts, they will be perfect places of safety, but some, in London, are raised scarcely any height above the road surface, others not at all, many being also unguarded by posts. The filth of the streets in wet weather, the danger of vehicles mounting the kerb, etc., render them more like places of danger than safety. The creation of underground conveniences entered from the centre of busy streets also seems indefensible. They are necessarily costly constructions, and to use them one has to run the unnecessary risk of being knocked down by a vehicle, and on emerging into the busy street again the danger is still greater. The convenience in Fleet Street at the Law Courts is an instance. No country has taken up the construction of the underground convenience so widely as England; others have worked upon different lines. Germany has gone in for a system of chateaus, often very picturesquely designed, a remarkably good one being in the Ludwigskirche Platz in Charlottenburg. These provide conveniences for both sexes, and might be usefully copied in London. A still further development would be to a wider municipal service, giving facilities for baths, etc., and answering the requirements of an enquiry office, etc.

Lighting.

The traffic of our streets by night makes good lighting imperative. In driving motor vehicles every nerve is strained, and the optic nerve is probably at the highest tension. There is no doubt London streets could be much better and economically lighted by more co-operation among the authorities concerned.

Traffic Considerations.

A committee of the borough councils of London, reporting this last March,

showed that the streets of London are paved with thirteen different kinds of material. Most of these are laid on a foundation of concrete, and include:—(1) Jarrah and karri wood from Australia; (2) deal and fir from Norway; (3) beech, larch, and red gum from California; (4) rock asphalt from Eastern France and Northern Italy; (5) basalt lava from Germany; (6) tarred slag-macadam from British ironworks; (7) lithophalt blocks and flints, etc. London has over 2,000 miles of streets, and all manner of varieties of stone, wood, asphalt, etc.—even india-rubber—have been and are used. We have travelled very far since the days of the old macadam paving, and the only portions of that now left in the City are a small portion of the Victoria Embankment and the Guildhall yard. It has been stated that London streets have cost over £3,000,000 to make them as they are to-day, and every year over £400,000 is spent in keeping them in repair. The general consensus of opinion is that the motor traffic is injurious to macadamised roads, but that it does not materially affect the surface of asphalted streets. And this leads to the opinion that asphalt is the road material of the future. It is general in the great capitals of the Continent, and in America, since first being laid in Washington, in 1878, it has never looked back in the States. It is not to be asserted that asphalt is always preferable. Not only may a better pavement be yet discovered, but there are places where wood, granite, brick, or macadam may be chosen over asphalt without a moment's hesitation. The point is that good paving is a *sine qua non* of the ideal street, and it is foolish to talk of good planning, vistas, street adornments, etc., if the street itself is badly or poorly paved.

Next to the paving surface, the great essential of the good street is its repair.

Building Considerations.

Architecture.—However much we may be entranced by the glorious medley of our picturesque old English towns, it would be idle to imagine that they can be taken as a model for present-day civic conditions. We are not laying out new cities like the Americans, and in our building works we must make the transition from the old to the new weave as happily as we can. The municipality can give the impetus by the erection of noble civic buildings and repeat history as in Florence, when the Duomo, the Palace of the Signoria, and the great churches of Santa Croce and Santa Maria Novella sprang into being almost in the same year, and that proud and ambitious city awakened its citizens to new life and aspirations.

Frontage Lines.—One of the most important points is the question of frontage lines. There is much to be said for the rigid restrictions which are enforced on the Continent. As we have passed the stage when four plain walls and a roof passed for a building, let us hope we are on the way to an era when the erection or alteration of a building will be impossible without strict harmony with its neighbours and its general surroundings. A particularly objectionable proceeding which is frequently observed is the setting back of buildings in the centre of a block and the bringing forward of the two end buildings. Even if gardens are provided, the street line is spoiled, and is later on still further "uglified" by shops brought forward to the boundary line. Granting the very great importance of light and air in our streets, it should be

*Abstract of a paper read before the Institution of Municipal Engineers, London, May 31.

possible to insist on greater regard being paid to the frontage line of the street without sacrificing these.

Æsthetic Considerations.

Anglo-Saxons are too prone to consider Art as a luxury, but it can be shown that "to clothe in an artistic form that which civilisation has made useful in the public life" is in the end financially profitable.

The Latin peoples view the street as their larger home. A writer has said of the Parisian: "He comes downstairs to the street; he descends to his thoroughfare as the millionaire expects to descend to his breakfast-room or his study. Whatever the gloom of the house, his street, catering for his need of colour, variety, beauty, and movement, helps him to feel good." If we view the city as Aristotle viewed it—a place "where men live a common life for a noble end"—we cannot but agree that the city can well afford to yield to so innocent and joyous a need.

Trees.—The place of the tree in the street is only slowly being conceded in England. At present it is carried out in a most haphazard fashion, seemingly on the principle that any vacant space calls for a tree. This is surely a wrong way to proceed, as the fine air of spaciousness is constantly marred by uncalled-for clusters of trees, and while wide open space may be spoiled in this way, the planting of trees in thoroughfares of a less width than 80 ft. is, again, likely to be unsuccessful. But much depends on a regular system in street tree-planting, and due consideration being given to the main points which arise in considering the individual merits of the case. Paris has over 100,000 street trees, and spends over £12,000 annually on their care and cultivation. But Paris has wide streets and boulevards, whereas our English towns have generally narrow streets, where, if the light were obscured by trees, it would be extremely prejudicial. But we have very many thoroughfares which would well admit of tree planting, even business thoroughfares, and in London we may well look forward to realising in the not distant future a "green girdle" round the metropolis. The trees planted in Paris are principally plane trees, sycamores, and chestnuts, while acacia has been introduced and thriven splendidly.

But beyond the physical merits of parks and squares, colour in the street softens architectural outlines, and so adds to city beauty, and the clumps of park foliage, colour and brightness of flowers, refreshing lakes, bring æsthetic charm into town life. It would be well if the various parks of a city were made into a system by means of tree-lined streets or boulevards, connecting them with the city proper. At the same time, as parks are so often on the outskirts, it would be well if they were connected as far as possible in a circle of boulevards round the city. This would achieve to some extent the same result as Continental cities have already gained by the great boulevards encircling their cities on the lines of the old fortifications.

Advertisements.—While there is a general consensus of opinion that the regulation of advertisements is urgently required, very little is really done. The architect and artist have every reason to complain because the advertiser who disregards the dignity and propriety of the streets degrades the best elements of their arts. Paris, Brussels, Berlin, and Rome have restricted the advertiser in many ways, but the restrictions in England have not so far been strong enough to effect more than slight reforms. It is possible that

the Housing and Town Planning Act may be used to regulate, restrain, and prevent public hoardings, and in London the County Council seems disposed to put some check on the advertising displays on house-fronts. All this, together with the gradual adoption of the permissive by-laws of the Advertisements Regulation Act of 1907, may, it is hoped, lead in time to a better view being taken of the street in an æsthetic sense.

Statuary. Fountains, etc.—When offensive public advertising is abolished, it will naturally follow that the street embellishments will be better cared for and cultivated. The function and placing of statuary in the streets, which is almost non-existent in England—that is, in comparison with the Continent—will be better understood. One of the greatest signs of progress is the fact that the new Victorian Memorial has been erected in a wide public thoroughfare, not actually in a park. English cities unfortunately have few open spaces capable of accommodating such a memorial, but with the better development of the street in the future the function of sculpture and the fountain is bound to be recognised. The Fountain of St. Michel in Paris is a striking example of how a city might grace the junction of two great boulevards.

The Street of To-morrow.

Progress towards the better street, in which the whole profession of the municipal engineer is so intimately bound up, must be on lines both logical and harmonious, and the demands for comfort and well-being must appeal to all as reasonable. The wish for a better street will always be visionary until the want of it is felt. The Civic Renaissance which broke over Italy in the fifteenth and sixteenth centuries was preceded by just such a rational movement. In the middle of the thirteenth century stone bridges began to span the rivers, and city streets and squares were paved with flags. In the fourteenth century the cities were a "spectacle of solid and substantial comfort," and the way, so prepared, heralded the Renaissance. The requirements of progress remain the same to-day, and with municipalities taking the first steps, perhaps unconsciously, in the making of the better street of to-morrow, they are helping in laying the surest foundations of the ideal city, and to give effect to the words of Ruskin, who, speaking of the blocks of London houses intersected by railways, said: "It is not possible to have any right morality, happiness, or art in any country where the cities are thus built, or thus, let me rather say, clotted and coagulated into form; limited in size, and not casting out the scum and scurf of them into an encircling eruption of shame, but girdled each with its sacred pomerium and with garlands of gardens, full of blossoming trees and softly guided streams."

DISCUSSION.

At the conclusion of the paper a long and animated discussion took place, in the course of which

Mr. Henry C. Adams said he disagreed entirely with the suggestion that street refuges should be removed. They not only helped to regulate the traffic, but were a great protection to the public, who would not take the trouble to use subways, which necessitated going down and up steps, but preferred to take their chances in crossing on the level. He deprecated uniformity of design in build-

ings, but agreed that it was necessary that controlling power should be given to local authorities so as to prevent the erection of the monstrosities which are occasionally seen. With reference to the suggested multiplication of street statuary, he was only in agreement as regards monuments such as the Victoria Memorial, but the ordinary street statue depicting public men could not, as a rule, be considered a thing of beauty, and as an educational asset it was practically valueless, the average "man in the street" probably not even being aware of the identity of those statues he passed every day of his life. The affixing of rosettes to houses in lieu of using poles for the suspension of overhead wires would result in clearing the streets of obstructions, but there was no power to utilise the property in such a way, and he had found, in connection with tramway work, considerable opposition from the owners, who claimed compensation, and from the tenants, who felt, or thought they felt, the vibration of passing cars, notwithstanding the use of efficient anti-vibrators.

Mr. C. Chambers Smith (Sutton) did not think the height of the kerb should exceed 4½ in. to 5 in. He was a great advocate of tree planting, and had planted thousands in Sutton, at an average cost of 4s. each. If trees were carefully lopped their appearance would not be spoilt, and in any event, if the work were done in February, the trees were covered with leaves soon after the pruning.

Mr. Bernard Partridge (Walthamstow) said that a large number of flowering trees had been planted in his district, which were most effective. No appreciable damage had been done by children or irresponsible persons. He pointed out that while the author proposed to clear all existing obstructions off the streets, he suggested adding an equal number in the shape of trees.

Mr. Thos. Mundy (Woolwich) said that trees were planted in all new roads at Woolwich. They were mostly plane trees, the lime not being used because of the tendency for the roots to rise near the surface, to the detriment and destruction of the footpaths.

A COMPLETE WARD UNIT FOR A MODERN HOSPITAL.

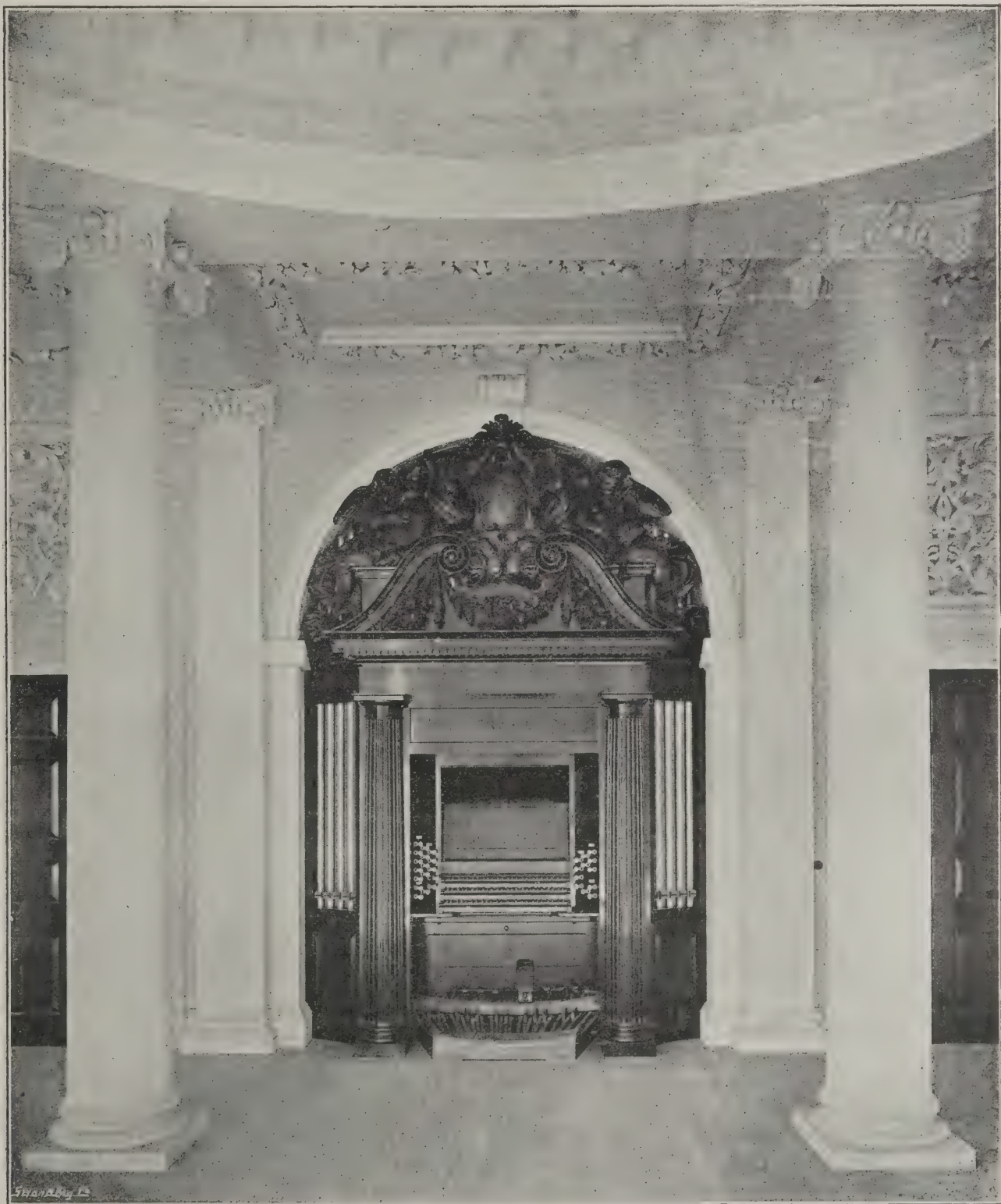
Writing in the "Hospital" with regard to the above, Mr. Edwin T. Hall, F.R.I.B.A., says: "The number of beds to be provided in the unit will vary somewhat in relation to the total number of beds in the hospital. In small hospitals the units are small, but for the present purpose it may be assumed that a large modern general hospital or royal infirmary in an important town is under consideration. In such large hospitals there is not a consensus of opinion as to the exact number of beds that should be provided in the unit. For example, St. Thomas's Hospital in London has a ward, or rather a floor unit, of 28 beds; Derbyshire Royal Infirmary, 26; Liverpool Royal Infirmary, 32; Newcastle Royal Infirmary, 25; Manchester Royal Infirmary, 26. Abroad there is similar diversity. For example, the Johns Hopkins Hospital at Baltimore has 28 beds; the Eppendorf at Hamburg (in its largest pavilion), 32; and the Nürnberg, 36. While, therefore, no dogmatic pronouncement can be made, I have found 25 to 27 beds have been quite satisfactory. Some hospital wards are made

28 and even 30 ft. wide, but 27 ft. appears to be liberal, as if 6 ft. 6 in. be allowed for a bed, there remains a distance of 14 ft. between the beds, ample for every purpose. The height of the ward is really governed by the æsthetic proportion. For practical purposes sanitarians hold that any air in a room more than 12 ft. above a floor is of little or no value, but a ward 27 ft. wide and of great length requires a height of more than 12 ft., and this requirement is not only one of taste, but it is of therapeutic value, for too low a room has a depressing influence on a patient, and so tends to retard recovery. A minimum of 13 ft. 6 ins. should be given to such a ward."

NEW MUSIC-ROOM, "HATCHLANDS," GUILDFORD

The music-room at "Hatchlands," has been built as an addition to a fine Georgian house originally belonging to the Sumner family, and now the property of Lord Rendel. The room and the organ chamber had to be designed to fit a limited space, and to be brought into direct communication with the central hall of the old part of the house. The music-room was planned as an oblong room 38 ft. by 24 ft., with a dome and cupola on four columns, and the full width of the room (24 ft.) over the central space. Acoustically this has been

very successful. The room is panelled throughout in pine painted white, with swags on the window side, drop carving on either side of the chimneypiece, and enriched ceilings (these were executed by Messrs. G. Jackson and Sons). The organ, by Messrs. Walker, stands in a large organ chamber at the end of the room, and the organ case, in carved mahogany with gilt pipes, fills up the archway between the chamber and the music-room. The organ case was made by Mr. Aumonier. The architect was Professor Reginald Blomfield, A.R.A., whose additions and restorations always strike one as possessing the fine quality of being quite sympathetic without loss of virility.



NEW MUSIC-ROOM, "HATCHLANDS," GUILDFORD: DETAIL OF ORGAN CASE
PROFESSOR REGINALD BLOMFIELD, A.R.A., ARCHITECT.

THE ARCHITECT AND THE
ENGINEER.

In the summary of Mr. J. Begg's paper on "The Architect in India," which appears in last week's issue of the Journal, there are some most amusing references to the confusion of functions of the architect and the engineer practising in that country, an architect being engaged in designing a steel-and-concrete bridge, while simultaneously an engineer was wrestling with the architectural problems involved in the design of a block of residential flats. It will be remembered that a proposal to exchange was received very coldly by the engineer.

A Full-dress Debate.

Overlapping of the two professions is not entirely unknown in this country, where, however, the most that is heard of it is an occasional stifled murmur or *sotto voce* complaint, now from one side and now from the other. In the United States, where more direct methods are generally favoured, the respective parties openly take the arena and fight the matter out *vi et armis*, but always with the utmost urbanity and good taste. One recalls with considerable admiration, for example, the set debate which was arranged by the Architectural League of New York. Turn and turn about, the architects and the engineers stated temperately and not so very immodestly the respective claims, and the result was, at all events, a nearer approach to mutual understanding.

What Architects and Engineers Think of Each Other.

Mr. William Barclay Parsons was the protagonist of the engineers. He was very frank, yet not reservedly. "What the architects think of engineers collectively," he said, "each one of you in his own part knows quite well and needs no telling. What the engineers think of the architects—ladies being present—I would not dare repeat." The presence of ladies should be regarded as indispensable to the organisation of any such debate in this country. Between the two branches of the profession, as Mr. Parsons recognised, there is a great gulf fixed that as yet no engineer has been found capable of bridging; but if that gulf is to be filled (as he hopes and believes to be possible), it is evidently necessary that the difference between the architect and the engineer should be recognised and be clearly understood, and the way opened by which the two groups can be made not only to inspire each other, but to produce something better in the way of construction than either group can possibly hope to obtain alone.

He claimed as engineers, Leonardo da Vinci and Michelangelo, as well as Telford and Smeaton, and quoted with approval Smeaton's definition of engineering as "the art of directing the forces of nature for the use and convenience of man." Another great man, whose name for the moment escapes us, claimed that the engineer should be able to do everything, even unto the hemming of handkerchiefs. Such breadth of view is exhilarating, but seems to conflict in some degree with that other wise saying to the effect that "science is classification."

Do Architects Lack the Power of Invention?

Mr. Parsons proceeded to say that in spite of the common origin of the two professions there is no doubt we have drifted far apart. The engineer, he said, has become an extreme utilitarian to whom economy—not necessarily of money

—is his measuring standard; while the architect has so welded himself to ancient models and rules evolved from conditions which do not now exist, that he has lost the power of invention. "You charge us," said Mr. Parsons, "and the charge is probably true, that we lack liberal-mindedness, and that we resent suggestions whereby our structures may be made more pleasing to the eye, and resent them especially if economy is affected. But do not you architects commit a similar error? Do you not shut your eyes to possibilities, the path of which has been opened by new materials of construction, new theories of design, improved tools to carry them into execution? The engineer may at least claim to have made extraordinary advances in the way of construction, or, as Telford put it, 'in the art of directing the forces of nature'; but let me ask you in all seriousness, what have you architects done in the same period?"

Nothing New in the Renaissance.

Apparently this very effective debating point was evaded by the opposition; but the short answer is, that the moment a man invents anything you call him an engineer. Mr. Parsons continues his railing accusation with: "Since the days of the Renaissance, 300 or 400 years ago, not a single style have you produced. As the name of that style indicates, it was not really new then—it was but a re-borning of the old. Perhaps, therefore, the claim might be made that nothing new in the way of a style has been produced since the Gothic swept over Europe in the thirteenth and fourteenth centuries." How sad! But—perhaps because of the presence of ladies—Mr. Parsons took compassion on the poor depressed architects: "I stated that architecture has done nothing since the Renaissance. So far as you gentlemen whom I have the honour to address are concerned, you have done two things: First, you have materially bettered the standard of taste in this country; and, second, you have erected the mammoth buildings that are the wonder of the age; but for this latter you are wholly indebted to the engineer. Without the engineer giving you the deep foundations, the steel frame, and the elevator, you would still be constructing office buildings five and six storeys in height"—a calamity that at once strikes us as being on the whole rather less harrowing than certain emotions which the tall building occasionally disturbs.

A Steel-constructed Gothic Cathedral.

Mr. Parsons, so far, has been merely playing his prelude. We now get his *motif*. He interprets Viollet-le-Duc as contending that there is certainly every reason why a new style should be produced. Mr. Parsons confesses to having once suggested the construction of a "Gothic" cathedral in which steel members would avoid the necessity for flying buttresses; and he is confident that if the architect of York Minster had had steel, and had had modern methods of mathematical analysis, he would have made use of them to the fullest extent, "if thereby he could have added to the richness of his design." There is still much virtue in ifs and buts and buttresses.

Architect as Creator.

There are at least traces of truth in Mr. Parsons's concluding observations: "Our trouble to-day is that the engineer admitting that he is not an architect, unfortunately goes further and says he does not want to be one. The architect, on the other hand, thinks himself a constructor and is not. The consequence is that

we have the two lines of thought—science of construction on one side and the art of construction on the other, separated, as I said at the outset, by a great wide gulf, and no progress in architectural construction will take place until this difference of point of view is recognised by both sides, until the architect is willing to lay aside the rules which governed his predecessors centuries ago and not only take up but take up fearlessly the science of the twentieth century, be willing to cease to copy and have that same real desire to create that has produced the monuments of antiquity.

"Gradually this will come about, every free discussion such as we are having to-night I believe advances us one step nearer the end. It probably will not come in your day or mine, but surely I believe that the day will come when the prophecy of Viollet-le-Duc will be realised, when the engineer, learning from the architect and appreciating his art, will teach the architect his science and his methods, and between them they will evolve a new style, perhaps a new order."

Architect Primarily Artist.

The champion of the architects was Mr. C. Grant La Farge. He contended that an architect is and must be primarily an artist. It is this which differentiates him from all other constructors. It is his duty not only to build well and permanently, but to make his construction beautiful. About this it is his duty—as far as he is able—to know everything. About everything else he should know something. In this broader field what he does not know himself he must supplement by the employment or co-operation of specialists. . . . But let it not be forgotten that in the mind of the owner, the public, or the occupant of the building, any fault in construction, or any hitch in operation, from the sticking of a pantry drawer to the collapse of the building itself, is laid at the door of the architect. He has the sole responsibility, and therefore his authority must be absolute. It seems proper, then, to make the claim that for such work the architect must indeed be the master builder.

The Æsthetic Side.

But how about the æsthetic side of it all? We have worked out our administration in a way to produce great material results, but have we so ordered our co-operating energies that each of them makes its utmost possible contribution to beauty? Mr. La Farge does not think so. He doubts whether reliance upon order and system can lead us any further in that direction. He thinks it is to a fuller development of our respective capacities that we must look.

Mr. La Farge remarked that Mr. Parsons was all for breaking loose from what he takes to be the restrictions imposed upon us by our following of that past, but there Mr. La Farge had to disagree with him. If we borrow from the past, one view is that we are wisely making use of what we can find of tradition, availing ourselves of all the long experience of our predecessors. Another is that we are mere copyists; those who hold it often tell us, in a derogatory way, that we had much better copy and be slaves, for that we are not capable of original production. How densely, how grossly ignorant; and yet, how true! Because who ever was otherwise? We see the great panorama of architectural achievement unfold before our eyes, from solemn Egypt, through the wondrous days of Greece and Rome, the mysterious pictur-

esqueness of the Romanesque, the amazing fertility and resource, the inexorable logic of mediæval time, to the gracious elegance, the sweet humanity of the Renaissance, and we wonder whether these men, *all* these men, were giants—a race apart—or if they could have been of common clay like ourselves, even if we are architects. And we know, of course, that they must have been just that. Then, how did they do it?

Setting the Bounds.

Well, if we want to know, we must, it seems to me, construct some sort of bounds within which they would work, some frame to concentrate their energies, some platform, as it were, for them to stand upon with feet secure, but which they should not overstep. These very things are not so far to seek. For the remote past we must reason by analogy, but of later times we do know, and the analogy is close enough to be more than mere conjecture. We know that they worked in manners and methods—what we rather inaptly term styles—that were local and peculiar to their own time and people. We know that tradition was a living thing and ever in the making; that in the form of rules of all sorts, of recipes designed to meet all known contingencies, it was handed on from father to son, from one man to another, from master to apprentice, from generation to generation. We know that the architect—the master of the work, as he was called—had at his command large bodies of skilled craftsmen, well able and ready to give vitality to every least detail of the work which he had planned. And we know, too, that in that planning, it was as the master builder that he worked, the man to whom building was an intimately familiar thing, who thought in terms of structural materials and their use, and not in terms of paper and pencil, and all the doubt and self-distrust that we of the drawing-board know so much too well. For him there were laws—call them what you please; rules, formulæ, recipes, customs, conventions, prejudices if you choose; but by those laws he was guided, and upon them he stood. Now, what did all this do for him? Did it limit him unduly, hinder his freedom of expression, cramp and repress him? Look at his work.

Did it not rather mean that, secure in knowledge, the master of his art, equipped by his own apprenticeship to rule those who must carry out his purpose, that very freedom was indeed his? That he need not go a-groping discursively throughout all sorts of alien and unrelated expressions, but that the field was close, compact, familiar, and that within its safe and reasonable bounds, whatever he possessed of fancy and invention might play at will. He was not set the task—stupendous and not to be accomplished—that in his own person he should discover, invent, reduce to order and principle those fundamentals which it had taken thousands of years before him so to find and reduce.

The Gospel of "Copying."

Let us remember always that just as we of to-day copy, and in our copying vary, so he copied—daily and forever he copied. He must have copied, according to where and when he lived, the remains of former eras as well as that which the other fellow had done around the corner last week. And out of his perpetual copying, his ceaseless repetition, came those universally accepted elements of architecture which to-day, in whatever style we work, are our gospel. Always the same and

ever varied, with bewildering, infinite variety, to contemplate them is to know what tradition means as a light for our feet along the path of free expression.

I cannot possibly reconcile myself to any notion of discarding any part of this, nor do I feel that there is any need of our doing so in order that we may, to the fullest possible extent, avail ourselves of new methods. Of the old traditions there is but pitifully little left to us, but that little is precious. To it we must not only cling, but from it we must learn what are the fundamental principles, eternal and immutable, which guided the men of the past and must guide us. We must learn to be, first of all, *builders*. Whoso is a paper designer is a theoretical designer; he is afraid of the blank spaces on his paper because it is as paper that he sees them and not as brick or stone, which they will be. Or conversely he trusts them when the materials of which he will build them, either because of their kind or of the manner of their use, will not look well.

Seeing Past the Drawings.

What then, you may ask, does all this mean to the engineer? Well, if we may say to ourselves that it behoves us to learn how always to see past our drawings, to let our imaginations and our invention work freely in the practical use of those very practical materials with which we must express ourselves and our time, then it seems to me that something not dissimilar points the way for the engineer. Let him widen his structural vision; let him learn that he, too, must equip himself with knowledge of all that man has done; let him realise that the principles of construction and the qualities of materials—and hence their appearance—are everlasting and do not change with the changing years. Let him cast himself free from thralldom to his quantitative methods and learn the value of the qualitative. Let him lay hold not only of the need for beauty in all construction, but of the fact that he himself may as well be a maker of it, if only he will open his mind to what men before him have done through the past ages and to how beauty grew inevitably upon their work, as do the leaves upon the tree. In short, he must be the broadly cultured man, trained in the knowledge of art, as of the humanities, and no longer the product of our narrow, time-serving, get-rich-quick vocational education, against which revolt is spreading daily.

Towards Mutual Understanding.

When all this happens, and when we, too, have learned our lesson, then will the architect and the engineer more nearly approach each other in mutual sympathy and understanding and in the ability to work together effectively toward one great end. Let us fear no trespass; there is room and to spare for all. And when we are all using it, we or our children, under that full development of our knowledge and understanding for which we are entitled to hope, we may then expect to do such work as will give us the right to call ourselves the brothers of those men who crowned with undying grandeur the Athenian rock; who, through the long procession of the centuries set their great monuments upon the hills of eternal Rome; who raised those shrines, marvel and delight of the Western world, complex as any of our vaunted "modern buildings," vastly more astonishing in their wealth of invention, their overflowing freshness and vitality, the cathedrals of France, which, like the jewels in a diadem, mark the top of man's endeavour to

make the divine soul within him sing in stone.

The peroration of such a speech may no doubt be regarded as a just occasion for Mr. La Farge's mild indulgence in the kind of rhetoric for which America is famous, and whereof the tallness has perhaps some subtle relationship to the sky scraper; but any slight excess of this sort will be readily forgiven Mr. La Farge, for the sake of his able statement of the case for the architect.

Close Collaboration.

While Mr. Parsons was more for the engineer and Mr. La Farge more for the architect, Mr. Owen Brainerd, of the firm of Carrère and Hastings, was more for both. He said he could not conceive how a thoroughly successful architectural design, involving important structural questions, could be accomplished except by the simultaneous consideration of the problem by the architect and the engineer working together. He, an engineer, was accustomed to collaborate with architects to the extent of working at the same time at the same drawing-board, so that the structural design proceeds with the æsthetic development, and, while being subordinated to it, nevertheless receives its due consideration; "and," he said, "we thereby avoid any divergence between the logic of the design and the logic of the structure."

COMPETITIONS.

New Infirmary, Bradford.

Fifty-four sets of drawings have been sent in for the proposed new infirmary at Bradford. The assessor, nominated by the president of the R.I.B.A., is Mr. Keith D. Young, F.R.I.B.A., of London.

LIST OF COMPETITIONS OPEN.

JUNE 16. BUSINESS PREMISES CYMMER.—The Cymmer Co-operative Society, Ltd., are prepared to receive competition designs for the rebuilding of their business premises at Cymmer, Port Talbot, Glamorgan. £15 and £5 will be awarded to plans first and second in order of merit respectively. Block plan, sections, and conditions were to be obtained on payment of 5s. (returnable on receipt of bona-fide plans), from the Secretary, Co-operative Society, Cymmer, Port Talbot. Plans must be received not later than June 16th.

JUNE 28. TECHNICAL BUILDINGS, NEWTON ABBOT.—The Governors of the Seale-Hayne College invite designs and estimates for buildings for agricultural and technical instruction. Premiums of £100, £50, and £30 are offered. Mr. C. Steward Smith, F.R.I.B.A., is the assessor.

JULY 1. CHAPEL AND SCHOOLROOMS, SWANSEA.—Competitive designs are invited for a chapel, schoolrooms, and class-rooms at the junction of St. Alban's Road and Finbury Terrace, Swansea.—Particulars from D. Walters, 19, Brooklands Terrace, Swansea.

JULY 7. SECONDARY SCHOOL FOR GIRLS, NORTHAMPTON.—The Northampton Borough Education Committee invite architects practising in the borough or county of Northampton to submit, on the 7th of July next, plans for a secondary school for girls, to be erected in St. George's Avenue, Northampton. Particulars from Stewart Beattie, secretary, Education Offices, 4, St. Giles Street, Northampton.

JULY 31. PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND.—Premiums, £1,000, £500, £300, and £200. Particulars, Minister of Public Works, Wellington, New Zealand.

JULY 31. DESIGN FOR AN IDEAL COUNTRY HOUSE.—The "Daily Mail" offers a prize of £100 for a design for a country house to cost £900 to £1,100. Architectural assessors, Mr. E. C. T. Monson, F.R.I.B.A., M.S.A., and Mr. Edwin J. Sadgrove, F.R.I.B.A., M.S.A. Particulars from Carmelite House, E.C.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

THE SOCIETY OF ENGINEERS.

The annual dinner of the Society of Engineers (incorporated) was held at the Criterion Restaurant on May 27th, the chair being taken by the President, Mr. F. G. Bloyd.

The loyal toasts having been honoured, Mr. Alexander Siemens, proposing the toast of "The Society," recalled that the Society of Engineers (incorporated) was an amalgamation of two older societies, one of which—the Civil and Mechanical Engineers' Society—had, before its inception in 1854, asked the Institution of Civil Engineers to grant certain privileges to students, which request the Institution refused, whereupon the students formed a society for themselves under the name above mentioned.

The President, in reply, said the Society had no wish to be in antagonism with other engineering bodies, but rather desired to co-operate with them as far as possible. With regard to the encouragement of the junior engineer, the Society had initiated a scheme for the affiliation of student engineering societies, which would do a good deal to assist junior men; and if they could do anything else to help the younger members of the profession they would be very glad.

The second vacation visit of the present session took place on Thursday last, June 8th, when, by the courtesy of the engineers, a party of members of the Society and their friends inspected the works in progress in connection with the extension of the Central London Railway from the Bank Station to Liverpool St. The work of driving the tunnels is being carried out from a shaft in Bishopsgate, near Acorn Street, and will be continued up to the junction with the company's existing sidings at the Bank. The small running tunnels are 12 ft. 5 in. internal diameter, each ring being 20 in. wide with 4 in. flanges, and made up of four radial-jointed cast-iron segments, two top segments and a key whose sides taper slightly in the reverse direction to the keystone of an arch; this admits of ease in erection. The joints between the flanges of adjacent rings and segments are formed of creosoted wood packings, and are bolted together in such a way that the horizontal joints of one ring break joint with its neighbours. The

weight of each ring is 33.4 cwt. Under ordinary conditions nine rings or five lineal yards of tunnel are built every twenty-four hours. The shield by which these tunnels are driven consists of a cast-iron or steel cutting edge, followed by a skin of $\frac{3}{4}$ in. steel plates, butt jointed, which are kept to the cylindrical form by means of suitable strengthened segments and girders, well bolted and riveted together. Forward movement is obtained by means of 7 in. diameter hydraulic rams, eight in number, disposed round the inside of the skin and arranged so that the tongues press against the iron lining already built. These rams are controlled individually or collectively by a set of valves, so that by a suitable combination the direction of the shield may be guided. The maximum pressure available is 2,000 pounds per square inch, which gives a total maximum push of 275 tons.

In the case of 21 ft. 2½ in. internal diameter station tunnel, the shield is on the same principle as that just described, and the method of procedure in construction is the same. There are twenty-two rams of 7½ in. diameter, each capable of exerting a total force of forty tons at a maximum, and in place of hand erection of the cast-iron segments hydraulic erectors are used. The rings of this tunnel are 18 in. wide, with 6½ in. flanges, and consist of ten radial segments, two top segments, and a key. The horizontal joints are machined true to radius, but the vertical joints are made with creosoted wood packings. The weight of each ring is 4½ tons, and the anticipated progress is about five rings or 2½ lineal yards per day of twenty-four hours.

The plant at the site of the working shaft consists of two 3-ton cranes for dealing with materials to and from the tunnels, and the following compressors for supplying compressed air to the tunnels and for operating the pneumatic-hydraulic pumps and grouting pans: One vertical compressor with one cylinder 19 in. diameter, 8 in. stroke, and three Reavels compressors, each having eight cylinders 12 in. diameter and 6 in. stroke. One of these latter works against a pressure of 15 lb. per square inch, the other two are two-stage machines and work against a pressure of 60 lb. per square inch. There is also a compressor by Ingersoll, measuring 18 in. by 18½ in., and an hydraulic intensifier converting a pressure of 750 lb. per square inch to one of one ton per square inch.

The contractors for the work are Messrs. John Mowlem and Co., and the engineers to the Central London Railway Co. are Messrs. Mott and Hay, of Westminster, for whom Mr. H. J. Deane acts as resident engineer.

MESSRS. SHANKS'S BATHROOMS AT GLASGOW EXHIBITION.

At the Scottish Exhibition of National History, Art, and Industry, now being held at Glasgow (see the illustrated account in the Journal of May 17th), the exhibit of Messrs. Shanks and Co., Ltd., which is situated in the Industrial Hall (Stand No. 113-115), consists of a suite of four modern bathrooms completely and sumptuously fitted. The appliances shown have been entirely manufactured at the works of Messrs. Shanks and Co., Barrhead, near Glasgow. The No. 1 bathroom is panelled with Skvros marble, with bands of Pentelikon blue, the top band having a gold mosaic inset. The floor is laid with white Sicilian marble

bordered with black. The fittings shown in this room are made of Victorian ware, and comprise a "Baronial" bath with silver-plated fittings for plunge and shower, a sitz bath, and a lavatory. Adjoining this room there is a w.c. compartment fitted up complete and heated with Messrs. Shanks's patent earthenware radiator. The walls and floor of the No. 2 bathroom are tiled, and the fittings shown comprise a patent "Paragon" spray bath in cast-iron white porcelain enamelled in and out, with nickel-plated plunge and spray fittings, porcelain enamelled sitz bath, and white vitroporcelain lavatory. A patent earthenware radiator is also fitted in this room. A w.c. compartment also adjoins the bathroom, in which is fitted a "Lever" syphonic closet, complete with nickel-plated fittings. The third room is fitted up to represent a dressing-room and bathroom combined. The walls are panelled in rosewood, and the floor is laid with oak parquet. The appliances comprise a No. 2080 cast-iron bath, porcelain enamelled in and out, the special feature of this bath being the side recesses to accommodate the soap and sponge trays. Over the bath is fitted an "Ideal" shower arrangement. A special Queen Anne lavatory, with Skvros marble top and a dressing table to match this lavatory, are fitted in this room. The other appliances comprise a vitroporcelain bidet, "Modern" closet with Ritz chair in rosewood, and a towel rail. The fittings in this room are gold-plated. The third bathroom shown is a replica of a bathroom as fitted into high-class passenger steamers.

FEDERATION NEWS.

Cardiff.

The monthly meeting of the committee of the Cardiff and District Builders' Association was held at No. 22, Castle Arcade Chambers, Cardiff, on May 26th. Mr. Charles Hoare, vice-president, presided over a large attendance of members.

The secretary read a letter received from the Town Clerk with regard to an application made by the association with respect to the apportionment of private improvement charges, from which it appeared that the view taken both by the Town Clerk and the City Engineer was unfavourable, and that to grant the application made by this association would involve a considerable loss to the Corporation.

The secretary read letter received from Mr. Warren, the Clerk to the Council, stating that the Council could not see its way to submit the revised bye-laws to this association, but when same were ready for inspection an advertisement would be inserted in the local papers in the usual way.

The vice-president called attention to the bye-laws relating to outside walls, which require the front and end walls of houses to be built in 14in. and 9in. solid work, with the result that the houses suffered from dampness, and he contended that if the builders had been allowed to build these houses with 11in cavity there would have been no dampness. Several members expressed the view that all these walls should be cavity walls, and after some discussion a sub-committee was appointed to look into the bye-laws of other towns, and to interview the City Engineer if necessary.

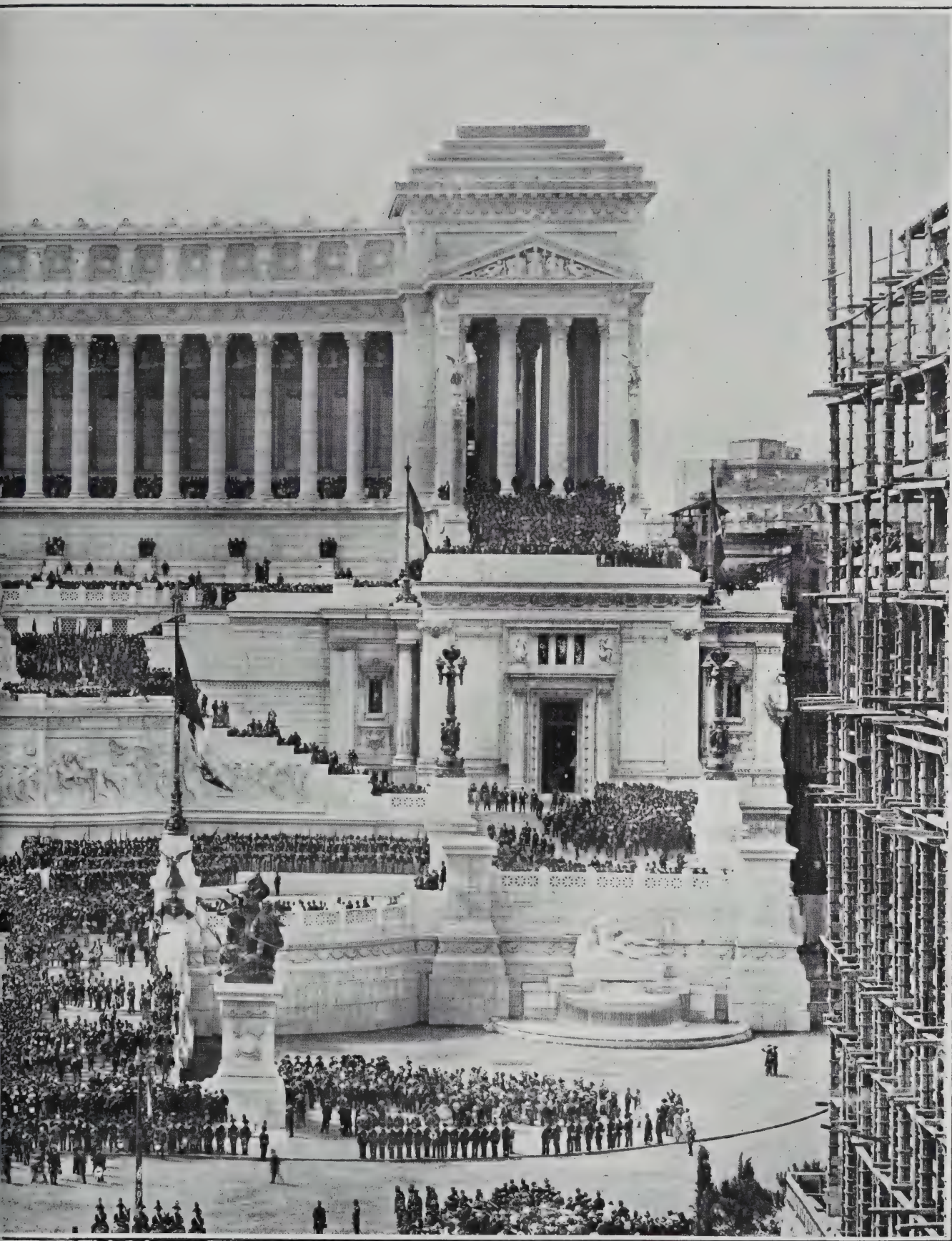
The secretary reported that the president had had an interview with the Electrical Engineer, who stated that the Corporation have no power at present to do work and make charges, and therefore could not enter into arrangements with our association similar to those which had been entered into with the gas company.

The practice adopted by the agents of several estates in requiring builders to deposit their agreements pending the preparation of the lease, and retaining these agreements in some cases for several months, was discussed, and it was agreed that the practice was open to objection on principle, and sometimes caused great inconvenience, and it was resolved that a deputation be appointed to wait on the estate agents, with a view of bringing about an alteration in the practice.

The desirability of the association now joining the Cardiff Chamber of Trade was discussed, and in view of the important public matters which are pending, and the need of carefully watching same in the interest of the public, including the transference of the telephone system, costs in bankruptcy cases, and other matters in which builders are interested, it was resolved that we now become affiliated with the chamber, and representatives were appointed to attend the meetings for the current year.—I. WATKINS, Secretary.



NATIONAL MEMORIAL TO KING VICTOR EMM



ROME. COUNT GIUSEPPE SACCONI, ARCHITECT.

[Photo: D. Anderson, Rome.]

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 21st, 1911.

Volume XXXIII.

No. 856.



Some quaint carvings of the early sixteenth century give piquancy to this old room, with its linen-fold panelling. The one shown above is perhaps the most interesting of all—a clown with cap and bells, jugglers and tumblers, and a musician at a country fair.

PANEL IN THE "OAK ROOM" OF ABINGTON MANOR-HOUSE, NEAR NORTHAMPTON



This room has an ornamental domed plaster ceiling, and is panelled up to the springing with finely figured Italian walnut veneered on mahogany, with inlays of tulip wood. The paneling was executed by Messrs, Shannon and Co., of London, the wood having been selected from the special stock of hardwoods kept by Messrs. Wm. Mallinson and Sons.

THE WALNUT ROOM, "ERLWOOD," WINDLESHAM, SURREY. PERCY E. NEWTON, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

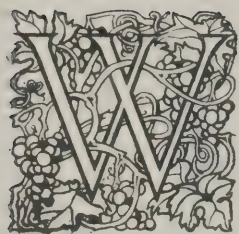
JUNE 21st, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 856.

NOTE : The List of Contents will be found on page IV. of the front advertisements.

Thoughts on Theatres.



WE are so much accustomed to the elaborate arrangement, in plan and section, of the modern theatre, that we are apt to forget how much more simple an affair was the earliest form of theatre of which we have any historical knowledge, the Greek Theatre. As a general rule, we build up our theatres from the ground level, introducing gallery above gallery, with many staircases for access, and an increasingly elaborate arrangement for exits; so much so that the number of places marked "exit" or "emergency exit" rather conveys the impression that the principal object in being in a theatre is to find a way out of it again. In one or two instances, as in the Criterion Theatre, it has been recognised that a theatre may, in part at least, be sunk in the ground as well as raised upon it; but in general our theatre is an erection in tiers from the ground level, with all the elaboration of planning in entrances and exits which such a system of construction renders necessary.

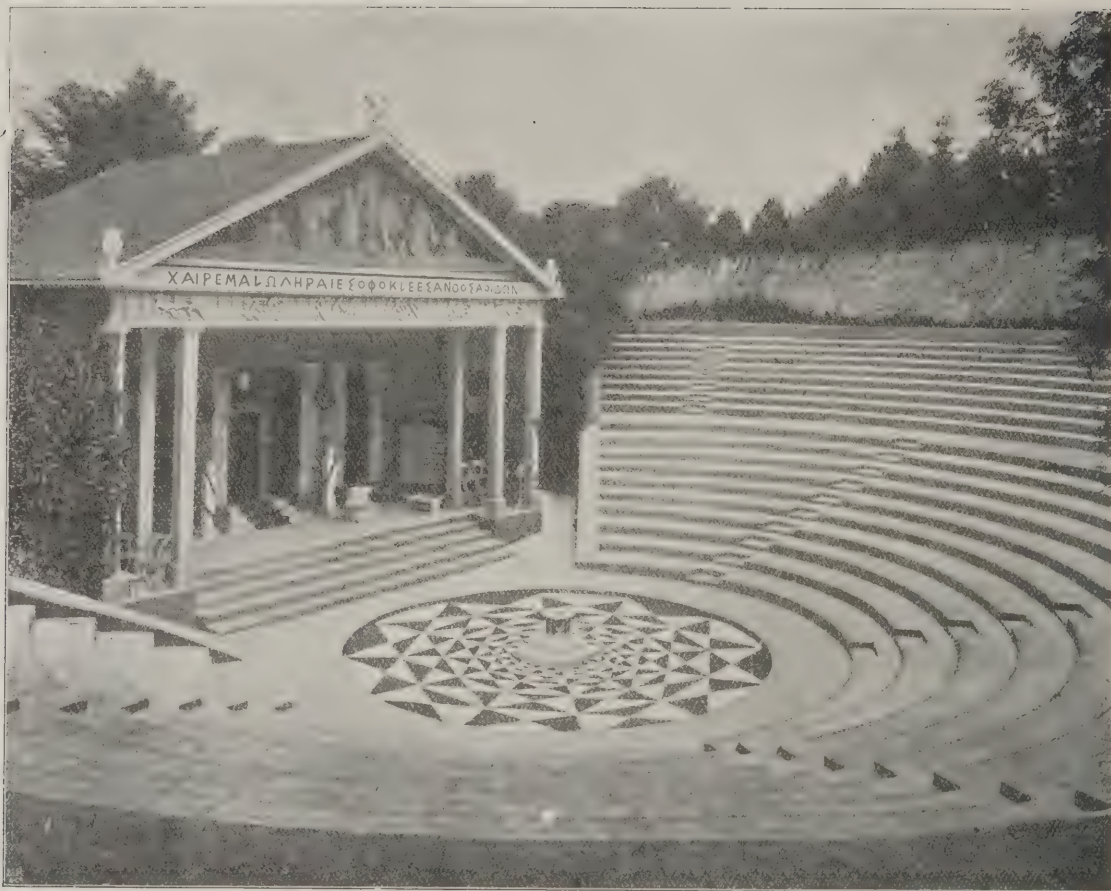
How different is all this from the simple unity of plan and section of a Greek theatre. There, the site for a theatre was selected in accordance with the natural conformation of the ground; the side of a natural hollow was chosen and benched out into seats on a horse-shoe plan, and at the lowest level of the ground was formed the stage, with a permanent architectural background. There could have been little difficulty about exits, for though the official entrance was by the *parodos* at each side, between the scene and the auditorium, it is probable that the theatre was rapidly emptied by exits on to the higher ground at the back of the auditorium.

These, however, were open-air theatres, and it is generally assumed that no such arrangement is possible for this climate. In winter it certainly is not; whether it is not possible for summer is a point that may be worth consideration; though it is true that we have not always that season with us, even at a time of year when we fancy that we have a right to expect it. But we might at all events take a hint from the Greeks as to the possibility of sinking part at least of the theatre into the ground, instead of laboriously building up the whole structure from the ground level. And we might do well to consider whether there is not a great deal of advantage in the extreme simplicity of the Greek arrangement of one great tier of seats rising regularly from the stage, in which all spectators could at least see equally well, although those on the furthest seats would have more difficulty in hearing than those in front. Wagner adopted this system in his Bayreuth Opera-house, where all the seats rise in one slope from the vicinity of the stage.

The Greek theatre performance differed essentially from ours in the presence of the chorus, a body of actors who commented on the action of the piece, or sung set poems in reference to it, probably accompanied by some evolutions which were performed in the open space at the base of the auditorium which was called the "orchestra," a word retained in modern language with a different signification. In the

centre of this space stood the altar of Dionysos, more familiarly known now by this Latin name Bacchus, the deity in honour of whose festival stage plays were first instituted in Greece. It was no doubt in order to provide best for the evolutions of the chorus, and for their being well seen by all the audience, that the Greek auditorium took the form of a horse-shoe, leaving as much of the circle as could be left without interfering with the front line of the stage on which the principal actors performed their parts. A small school of German archæologists, led by Dr. Dörpfeld, have attempted to maintain that there was no stage at all in the Greek theatre, and that the principals acted in the orchestra along with the chorus. Such an opinion seems absurd for two reasons: First, the whole point of the opposition between the two functions of principal actors and chorus would have been lost if they had all been intermingled together in the orchestra; the chorus in the Greek play are not actors but commentators, and therefore naturally occupy different ground in the theatre. Secondly, that if the whole action took place in the orchestra, the natural arrangement of the seating would have been as an amphitheatre, so that the audience could be seated all round in an unbroken ring to watch the performance in the centre. Where was the use of breaking off part of the circle and reducing the plan to a horse-shoe curve, unless there was something at one side of the theatre which demanded special attention and special provision? Anyone who has witnessed the performance of Greek plays at the Bradfield College Theatre cannot but recognise how completely the traditional Greek plan of theatre there adopted lends itself to the representation of the Greek form of drama. (See illustration, p. 640.)

The Romans, with their characteristic indifference to any difficulties which could be got over by lavish expenditure of material and labour, did not, like the Greeks, content themselves with looking out for a hollow site suitable for the formation of a theatre, but built their theatre up from the ground, basing the auditorium seats not on natural ground, but, as at the Colosseum, on a vast erection of vaulting. In their plays the principal actors were more numerous and the chorus (if admitted at all) less important than with the Greeks; consequently their stage was raised to a greater elevation and their auditorium limited to a semicircular form, or extending little beyond the lines of the semicircle. Both Greek and Roman theatre had permanent architectural erections as the background to the stage, a feature which was revived by Palladio in his theatre at Vicenza. The fine effect of this architecturally cannot be questioned, but it is of course inapplicable to the modern drama, in which a greater number of characters are introduced than in antique drama, with a great many more changes of scene; and a degree of realism in scenery is demanded which a Greek or Roman audience would not have thought of expecting—with such changes of scene a permanent built-up scenery cannot be made to work in; as Dr. Johnson is made to say in the speech credited to him in "Rejected Addresses"—"Permanent stage-doors we have none. That which is permanent cannot be removed, for if removed it soon ceases to be permanent." But in fact Greek drama was something essentially different from the kind of drama for which our modern theatres are erected. It hardly



THE GREEK THEATRE AT BRADFIELD COLLEGE, BERKSHIRE.

professed to represent real life; it represented fateful and symbolic personages and legends, engaged in great and fateful actions, and the architectural scenery had little more reference to one set of personages than to another.

The performances at the Bradfield College Theatre, which have been going on during the past week, and which partly suggested these remarks, do, however, suggest the question whether something more might not be made of open-air theatres and open-air performances even in this climate. Open-air performances, in the shape of what are called "Pastoral Plays," are sometimes given in England, but generally in very imperfect surroundings. Some open-air theatres on the Greek plan, as carried out at Bradfield, without exactly imitating the Greek form of theatre, might be very useful for carrying out performances of this class, and might even prove a great attraction. Under favourable conditions of weather there is a great deal to be said for open-air theatres. Everyone can see; there is no complaint of want of ventilation; and the effect of pure air, as compared with the always more or less vitiated air of an ordinary theatre, is such that we have heard it said by people that though they always got tired or got a headache in a closed theatre, they never had the same feeling at Bradfield. And as to hearing, it is surprising how satisfactory that is, with a back-scene to reflect the sound. One really seems to hear better than in an ordinary theatre without any undue exertion on the part of the actors. And the designing of the architectural proscenium for such a theatre would form a very interesting task for an architect.

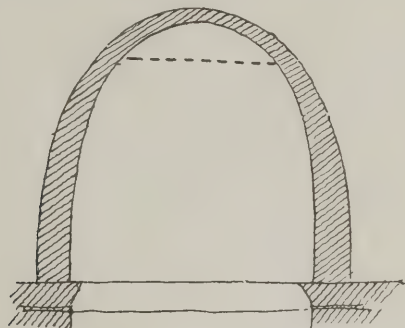
In connection with this last point, we may suggest that, now that the triennial Bradfield play has become an established and very popular institution, the College might do well to endeavour to raise funds for rebuilding the architectural proscenium in a manner more worthy of the occasion and more resembling what the architectural background of a Greek stage of the best period would probably have been. The present façade represents a timber erection only. The theatre is stated to be modelled on the basis of the remains of the theatre at

Epidaurus, and it may be so as far as general plan and proportions of auditorium, stage, and orchestra are concerned. But a Greek theatre at the date of 400 B.C., and at an important place, certainly would not have a timber proscenium; if it had, there would be no vestige of it left now. It would be worth while to try to do something better. It might be made the subject of a small competition open only to architects who were old pupils of Bradfield College.

The Institute Meeting.

THE paper read by Mr. E. Richmond on "Building in Egypt," at the last meeting of the R.I.B.A., was very interesting as giving information about the naïve methods of construction practised by the Egyptian small builder and artisan of to-day, and it would also be useful to any English architect who may receive commissions to carry out buildings in Egypt, who will learn from it a good deal about the peculiar conditions of soil and climate that have to be contended with, from an architect who speaks from a good many years' practical experience. It does not appear, however, that the present building practice in Egypt throws any light on the methods employed in ancient Egyptian building, although it was assumed by some of the speakers that it did; and there was too much of an inclination, among the Phil-Egyptologists (to coin a word) who spoke, to assume that the empirical constructive methods of native builders were of special value and of long descent. The real fact is that the ancient Egyptians were great architectural artists, and very clumsy engineers; and the Egyptians of the present day seem to retain the clumsy engineering without the architectural art. We should have been curious to know whether anything in modern Egyptian building practice explained the anomaly of the sinuous up-and-down line of the base-courses employed in some of the ancient Egyptian walling; but Mr. Richmond had nothing to say on this point. Professor Flinders Petrie referred to the subject, and described the practice as a contrivance for avoiding the effects of move-

ment of the ground and giving elasticity to the walls, but he did not attempt to explain on what principle it could have this effect; and it seems just possible that the sinuous line of the mud-brick walls has really been caused by the movements of the ground, just as the billowy surface of the floor of St. Mark's is caused by movement of the pile foundations. There is another point in Egyptian foundations to which no reference whatever was made, viz., the fact that in various instances, not in mud-brick walls, but in stone walls, the lower courses near the ground are found laid in a long concave curve, the smaller courses above them being straight. Choisy was so puzzled by this that he endeavoured to account for it by the absurd supposition that the masons had followed the sagging of the cord pegged out to give the line of wall. That explanation will certainly not do; the curved base-courses were laid so with some imagined practical reason; but it may be doubted whether the reason was a good one or whether the system had any but a purely imaginary advantage. Then we were told by another Egyptologist how absurd it was for English builders to come out and attempt to build a dome in semicircular section with mud bricks, instead of following the accepted ovoid section of the country, which had been adopted to suit the mud bricks. We do not believe that was the reason at all. The Sassanian domes have just the same section, and it arose in both instances from the practice of erecting domes without any built-up centering. It is quite possible to build a dome of semicircular section without centering, but it means very careful cutting of the stones, and rebating them so as to hang each course on the one below it. With the rough masonry of the Sassanians and the Egyptians, the natural method is to keep the lower part of the dome with only a slight falling in, and then near the top, as indicated by the dotted line on the sketch, it would be easy to put two



or three timbers across to support a light centering for closing in the top. The form is the result of the method of building, not of the nature of the material employed. Altogether, while the facts given in the paper were interesting, the tendency in the discussion was a great deal too much to accept everything in modern Egyptian building as right because it was the practice of the country. The conditions of the country are certainly peculiar and need special knowledge; but the paper led us also to the conclusion that Egyptian methods of building need a good deal of improvement.

The Demolition of Old Vienna.

THE Vienna correspondent of the "Pall Mall Gazette" says that probably in no other capital in Europe is there so much building going on at the present time as in Vienna. That is to say at least so far as the "Innere Stadt," or centre of the city, enclosed by the Ringstrasse, is concerned. Large houses, many of them of considerable antiquity, are being pulled down and replaced by structures with imposing façades and equipped with all modern improvements. There is scarcely a street in the older parts of the city where there is not some building work being carried out.

Vienna is being modernised at a rapid rate, but at the same time in a conservative way. The city authorities are very strict in the enforcement of the building regulations—they

insist upon uniformity of elevation being maintained, and refuse to entertain for a single moment anything like the American "skyscrapers."

Unfortunately, all these building improvements threaten to destroy some of the most attractive bits of "old Vienna." Historical monuments of the seventeenth century, palaces and comfortable-looking burghers' houses, with beautiful carved stone entrances and quaint old courts with fountains in the rear, are fast being demolished. In some parts whole streets have fallen victims to the mania for restoration, and the "Innere Stadt" is losing its old historical character.

Efforts are now being made to save some of the really picturesque and historically valuable buildings still remaining, and to this end a society has been formed under the title of "Altwien," or "Old Vienna." At its head are many members of the aristocracy, antiquarians, architects, and artists who do not desire to see Vienna brought down to the level of Berlin or Chicago. And in order to interest as many persons as possible in the work, the subscription has been placed as low as two crowns—one shilling and eightpence.

"Old Vienna" will draw attention to the value and significance of old houses and fragments of street architecture, and, working in conjunction with the authorities, will try to save such from ruthless spoliation at the hands of too energetic builders and speculators. In some cases it may be possible to remodel interiors whilst preserving specially fine façades, and in other cases where the whole building is demolished, picturesque archways or old carved oak doors may be carefully removed and set up elsewhere. The new society can be assured of having plenty of work to do, at any rate.

Arcades for London Streets.

MR. PAUL WATERHOUSE, F.R.I.B.A., is a zealous advocate of arcading for London streets. From the architectural point of view, he says, there can be no question as to their desirability. There is, in fact, everything to be said for them. They are the easiest and the most dignified solution of one of our hardest problems—how to compose a stately and solid architectural elevation for a building the lowest storey of which is to be mainly shop front.

"The arcade—by which I here mean, not a passage like the Burlington Arcade, but a series of arches or of columns carrying a roof over the pavement—at once solves every difficulty. Where such a device is used, the upper frontage of the house may be either in line with the edge of the pavement, thus being supported directly by the arches or the colonnade, or set back to the same face as the shop frontages, in which case the roof over the pavement becomes a balcony for the first-floor rooms. In either case the arcade or colonnade provides a base for the building of a character far surpassing any effect which can be produced where the ordinary shop-front construction prevails. The fragment of arcade still remaining at the south end of the Regent Street Quadrant—a relic of Nash's longer loggia—shows at once the dignity which results from such treatment. Another familiar London example is the more modern frontage of the Ritz Hotel, in Piccadilly. In view of the success of these specimens, one is constantly tempted to ask why the idea is not more generally adopted in London architecture. The answer is generally an appeal to the question of climate; but climate alone cannot be wholly responsible for London's rejection of an artistic and commercial expedient which is successful not only in many Continental capitals, but even in certain British provincial towns—Chester, Nottingham, Dartmouth, and Dundee, to mention a few."

Answering a question as to whether one or two modern arcades in London had been unsuccessful, Mr. Waterhouse said: "Some years ago a building was erected ostensibly on the Chester plan, but it had to be altered. In the first place, its position was not wholly favourable; and, secondly, the upper gangway, or loggia, was too high above the street. People will not ascend a fairly high staircase to a footway

that leads to nowhere. I can see no reason why 'rows' on the Chester principle, colonnades like those of the Nottingham market-place, or arcades such as those of Milan or of the Rue de Rivoli, should not be a complete success in London, provided that they were adopted with sufficient courage and liberality. A timid attempt on a small scale or in an inferior street will always fail, for the shopkeepers will shrink from its supposed eccentricity."

The Byzantine Research Fund.

THE Byzantine Research Fund held a meeting on Tuesday week (not very well attended as to numbers), at the rooms of the Society of Antiquaries, when a complete set of drawings of the interesting and very ancient church of St. Irene, at Constantinople, made by Mr. George, were exhibited and briefly described by their author. The exhibition of such a set of drawings was a matter of some interest, as the church was till lately exceedingly difficult of access, and in the present case a considerable amount of diplomatic pressure had to be brought to bear, to allow of the drawings being made. St. Irene is a kind of cradle of Byzantine architecture, representing in a very simple form the main elements of the style which was perfected in S. Sophia. Dr. Edwin Freshfield, the President, then exhibited a long series of slides representing the remains of churches at Hierapolis and elsewhere in Asia Minor. These included some details of interest, but mostly they were such mere ruins that they afforded little evidence of the original plan. Some more interesting work was shown afterwards, however, especially a number of photographs of Byzantine detail from churches in Tunis, including a remarkably fine example of the type of capital known as the "wind-blown capital" from the leaves being carved as if blown by the wind in one direction. The subject of Byzantine architecture, especially in its earlier phases, is of such architectural and historical interest that one would wish that the Byzantine Research Fund should receive more public and professional support than it seems to have received so far; but we add that what seems wanting in its meetings is a better and more complete exposition of the subjects dealt with. At the meeting in question the illustrations constituted the main interest rather than the lecturing, which was wanting in arrangement and coherence.

The Victor Emmanuel Bridge.

THE new Victor Emmanuel Bridge, which was formally opened last week by the Roman municipal authorities, crosses the Tiber at the Borgo of Santo Spirito, the river end of the old hospital having been pulled down in order to make room for its approach. Its total length is 117 yards, and its width 22 yards; it is supported on two piers, so that the three spans are about 31 yards across. Above the middle of each span are erected obelisks on both parapets which will carry the lamps for lighting the bridge at night. The extremities of the parapets end in four square pillars, 12 yards high, surmounted by bronze Victories designed by the sculptors Casaldio, Palazzi, Cataldi, and Pifferetti. Above the middle of the piers on both parapets will stand four groups of sculpture representing "Political Triumph," by G. Nicolini, "Military Valour," by T. Griselli, "The Fatherland," by C. Reduzzi, and "Fidelity to the Statute," by G. Romagnoli. These groups, as well as the whole of the stonework of the bridge, are in travertine quarried from near Tivoli. The bridge was designed by the architect Signor de Rossi. The first stone was laid in May, 1908. The sculptors have been less expeditious in their work, and as yet none of the four groups of statuary are finished. The bridge, however, in the opinion of the Rome correspondent of the "Times," does very well without them; but is he not somewhat premature in the observation that sculpture is curiously apt to falsify preconceived notions as to the appear-

ance it will assume *in situ*, and that perhaps it is better without their addition, since these masses of stone figures will look far too heavy for the spaces they are meant to adorn? Why not "wait and see"? There is, indeed, a growing feeling that carved work ought to be invariably done on the spot, so that the artist might be duly influenced by the proper environment; but perhaps this is asking too much. Besides, the countervailing disadvantages are obvious, and might in effect outweigh the gains. But if the artist himself has not always a very adequate power of visualising his work as it will or should appear in position, it is difficult to credit the critic with a superior endowment of this delicate faculty. There is therefore the more hope that his gloomy forecast may be falsified.

Monumental Misspellings.

MONUMENTS being for the moment a common topic, it was natural that attention should again be directed to the extraordinary mistakes that occur so frequently in the inscriptions. Where the inscription is in a foreign tongue it is explained if not excused, as in the case of a Hebrew inscription that appears on a recently erected statue. Or the mason working upon an English inscription may be a foreigner. When, however, the error is one of fact, as in the wrong dates on the monuments to Spenser and Sterne in the Abbey, the mason or sculptor is presumably not to blame. Simple and obvious misspellings, such as those cited by a writer in the "Morning Advertiser," surprise by their naiveté. A bust of the late Lord St. Heliers is said to have had on its pedestal the beautiful word "Admiralty," while, per contra, an i too many being matched by an i omitted, a memorial to the Duke of Cambridge had "Divison" instead of "Division," and "Commanded" usurped the place of "Commander." On a statue of Sir Redvers Buller, Salamania was spelt "Salamanoa," Toulouse "Touluoise," and Vimiera "Vimieta." The extraordinary misspellings—or perhaps it would be more fair to call them inconsistent spellings—which provoke so much inopportune smiling among the monuments in Westminster Abbey have at least the merit of being racy of their period. But nowadays we pretend to some sort of an established orthography. The artist, however, is in all ages apt to be sublimely careless of the rules of the game, and the modern inscriber of lettering is apt to be very shaky in his spelling. He is probably too earnestly concerned in getting beautiful shapes for his characters to pay much attention to their correctness of number, sequence, and identity.

St. Paul's Bridge.

IT is exceedingly satisfactory to find that the Corporation Bill for St. Paul's Bridge has been re-committed by Parliament, by a majority of 156 against 99. This action of Parliament, which is more decisive than we had ventured to hope for, will be some check upon the attitude of official bodies, who seem to think that because they find the money for a special London improvement they are to decide how it is to be done, and to treat London architecture as if it were their property. The thanks of all who are interested in the architectural side of the question are due to Mr. Morrell, who has made such an excellent stand in Parliament in regard to it: to Professor Pite, for his able and convincing letters to the public press; and to the *Times* for its hearty support of the architects and others who have objected to the Bill. Last Thursday, however, Mr. Morrell amended his instruction to the Committee to the effect that they shall be "satisfied that the scheme, both in respect of architectural design and convenience of traffic, is the one best adapted to the public needs and best suited to the character of the site." The Corporation accept this compromise, and are now prepared to consult an independent architect. We do not share the opinion that thus the vexed question is satisfactorily settled.

Commonwealth Offices for the "Strand" Island Site.

IT seems probable that the "island" site in the Strand is at last to be covered by a building, for the Federal Parliament of Australia proposes to erect on this site a palatial block of Commonwealth and State offices. The proposal is to acquire the whole of the triangular area of land fronting the Strand, Aldwych, and Melbourne Place, including the Victorian Government offices now standing, which will be incorporated in the Commonwealth block of buildings.

The matter has engaged the attention of Mr. E. L. Batchelor, the Commonwealth Minister of External Affairs, during a considerable part of his stay in London in connection with the Imperial Conference. He has inspected several suggested sites and investigated several schemes for the acquisition of existing buildings including one facing Trafalgar Square and the recently-closed Gaiety Restaurant. His final choice was in favour of the site above mentioned.

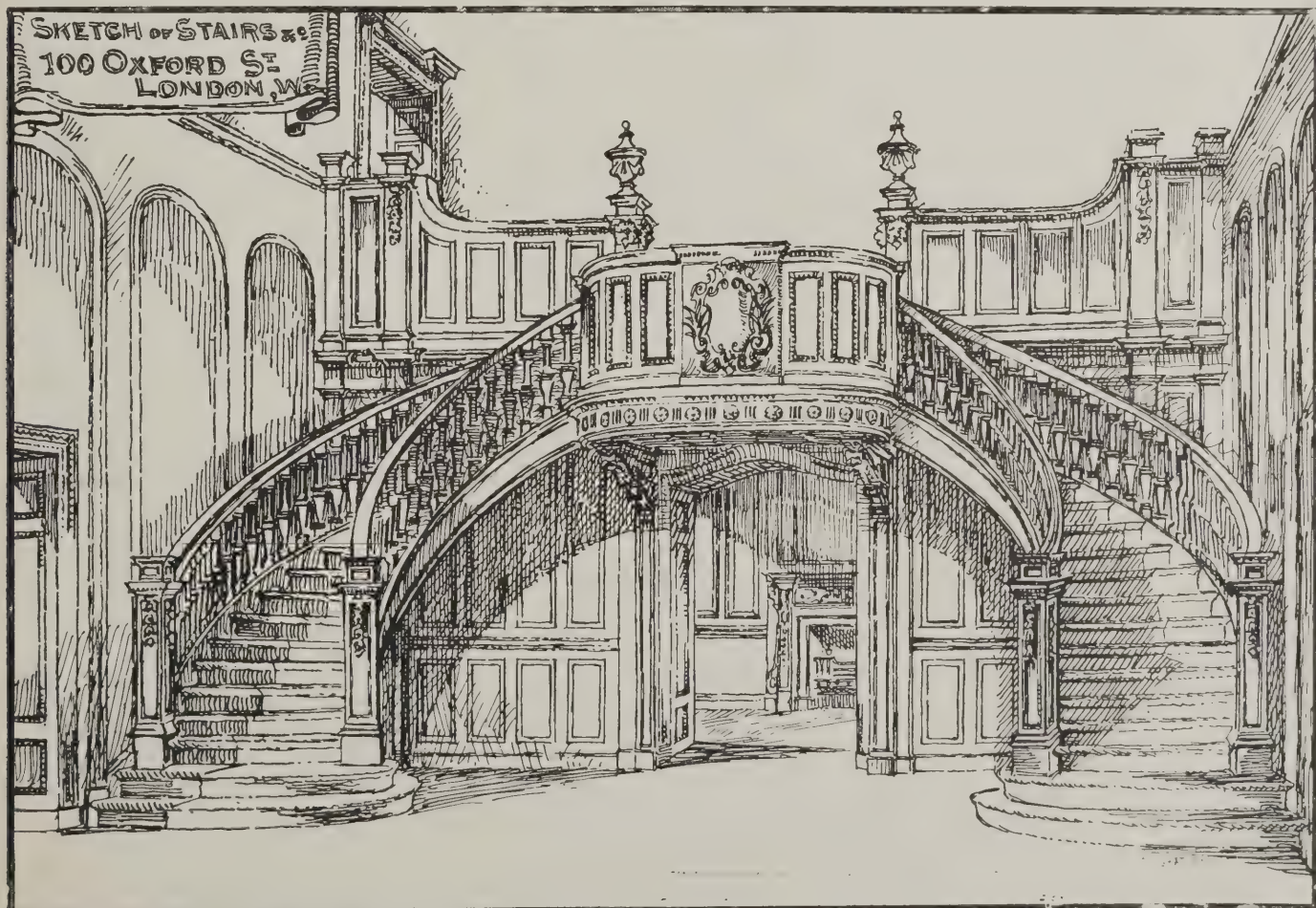
There are a large number of Members of the Federal Parliament and also several of the State Premiers of Australia in London just now in connection with the Coronation and Mr. Batchelor has been in communication with them all with reference to the matter. On Thursday last he visited the places under consideration in company with about twenty members of the Federal Parliament, who almost unanimously concurred with him in the choice of the Strand site. He subsequently had a consultation with the State Premiers, who agreed to recommend their respective Parliaments to co-operate with the Federal Parliament by incorporating their London offices in the Commonwealth building. By this arrangement all the Australian official representatives will be housed under one roof, including the High Commissioner for the Commonwealth and the Agents-General for New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania. On Friday Mr. Batchelor communicated with the L.C.C. for the purpose of acquiring an option.

Negotiations for this site were begun four years ago by Sir William Lyne, one of the Federal Ministers attending the Conference of 1907. An option was obtained in accordance

with a proposal for carrying out a scheme similar to that now contemplated, but Sir William Lyne thought the County Council's terms excessive, and after considerable delay negotiations were broken off. The Government of the State of Victoria, however, went on with the matter, with the result that offices were built by that State on a portion of the land adjoining the narrow thoroughfare leading from the Strand into Aldwych, now known as Melbourne Place.

Proposed Demolition of the Roman Aqueduct at Seville.

EVERYONE who has visited Seville, says the "Times" correspondent in that city, will remember the Roman Aqueduct there. "Now, alas, if the *Alcalde* and the Town Council of Seville have their way, we shall soon have looked our last on the Caños de Carmona, as the aqueduct is called; the pure unfailing stream which has run for some 2,000 years through channels made before Christ was born, will henceforth be conveyed through a cast-iron pipe into the fountains which furnish drinking-water for the poor and ripple musically in the patios of the rich and a row of villas and warehouses will replace the beautiful arcades designed in the time of Julius Cæsar and renovated under the rule of the Almohades more than seven centuries ago. Those interested in its destruction assert that the walls are dirty, that the water, owing to fractures in the channel, is dangerous to health, and that the structure restricts the development of the suburb which it traverses. Yet there is nothing approaching to ruin about it, and its demolition would be an irreparable loss, not only to Sevillian but to European art. The water is not in the least insanitary; it comes from the same sources as those of the English Water Company of Seville, whose supply is renowned for its purity. If it is fouled by goats or sheep in the nine miles or so between Seville and Alcalá, more shame to the Town Council of the city, to whose good care these water-rights were commended in privileges granted by Fernando III. and Alfonso the Wise in the middle of the thirteenth century.





NEW STAIRCASE AT NO. 100, OXFORD STREET, LONDON, W.
GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT.

SOME WEST-END SHOWROOMS

The accompanying photographs, plans, and drawings illustrate the new warehouses, showrooms, counting house, etc., which have been built for Messrs. F. and C. Osler, Ltd., in the rear of No. 100, Oxford Street, W. The warehouses and stock rooms are reached from Newman Mews, and were built by Messrs. Watson Bros., of Hallam Street, Portland Place, W.

The new showrooms are for the display of electric fittings, and are arranged as shown upon the accompanying plans, and additional china galleries are provided on the first floor, reached by the new main stair and by a lift from the ground floor. The stairs and screen were executed in specially picked dark mahogany by Messrs. Elliott and Son, of Caversham. The various showrooms, the counting-house, and the china galleries were built by Messrs. Sabey and Sons, Ltd., of Islington, who also carried out their interior finishings. Showroom No. 4 has oak-panelled walls, the counting house and its approaches being panelled with teak. The long gallery in which the staircase is placed was designed by Owen Jones, and in its day was highly spoken of. Its coffered ceiling shows prominently in some of the photographs.

The passenger lift was provided by Messrs. Smith and Stevens. The whole of the carving and modelling, including that of the staircase, is by Mr. W. J. Sparrow, of 151, Oxford Street, W.

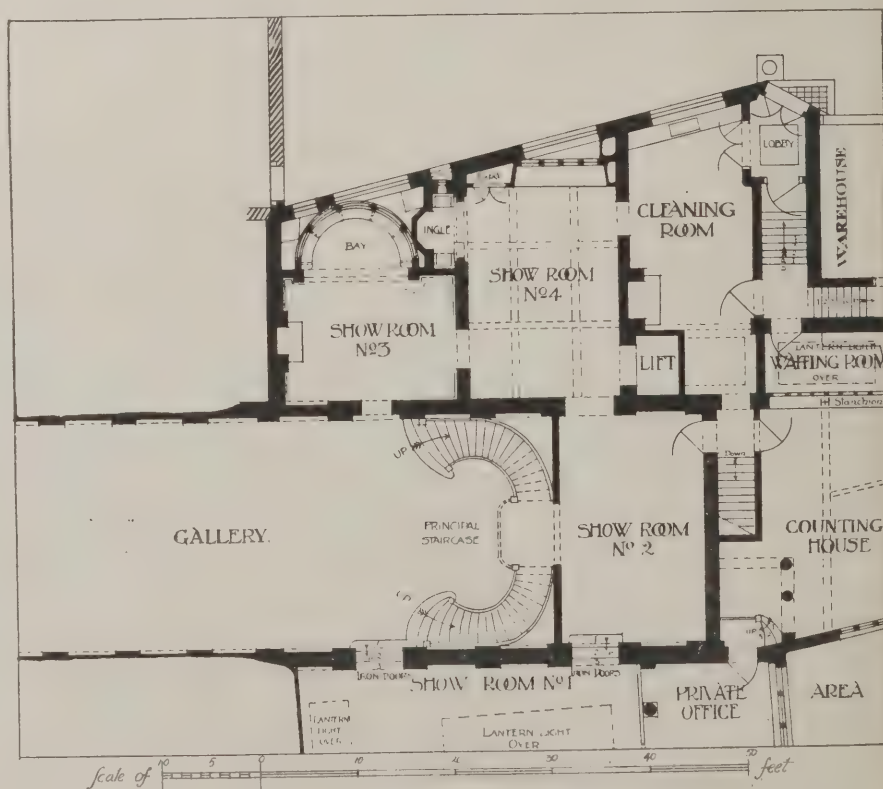
Mr. George Hornblower, F.R.I.B.A., was the architect for the whole.

THE VICTOR EMMANUEL MEMORIAL.

(See Centre Plate.)

The monument to Victor Emmanuel II. at Rome, which was unveiled by the King of Italy on June 4th, was designed a quarter of a century ago by Count Sacconi, an architect of genius, who unfortunately died before his *magnum opus* was completed. The monument is said to have already cost £2,000,000, and before it is entirely completed, with all the sculpture and decorations in place, some years at least, and perhaps half as much again in money, will be required. The monument consists of a vast portico, 272 ft. long, with *propylæa* on either side, each surmounted by a bronze quadriga. In the centre is the huge equestrian statue of Victor Emmanuel II. (by the sculptor Chiaradia), in gilded bronze, 40 ft. high, which stands on a pediment 36 ft. high, carrying bas reliefs representing fourteen of the most illustrious cities of Italy. Behind the statue of the great King, on the stylobate supporting the portico, are eight statues of Cavour, Garibaldi, Mazzini, and other heroes of the Italian Unification, while immediately below the equestrian statue is the Altar of the Country, which has in the centre a niche with a female statue, also of gilded bronze, of Rome, the Altar having on each side bas-reliefs of the principal occurrences which gave Rome to Italy. On the right and left, in front of the doors of the *propylæa*, are statues of Right, Strength, Concord, and Sacrifice.

There are on the different levels six triumphal columns bearing bronze Victories, while in the immediate front of the monument, on either side of the marble steps that lead up to it, are two fine bronze groups, 17 ft. high, by the well-known sculptors Monteverde and Jerace, representing Thought and Action, and on either side of the front are two fountains,



PART PLAN OF NO. 100, OXFORD STREET, LONDON, W., SHOWING NEW STAIRCASE AND SHOWROOMS.

with statues above of the Mediterranean and the Adriatic.

Although situated on the slope of the Capitol, this Memorial of United Italy has been isolated, the surrounding houses pulled down, and even the little *Palazetto di Venezia*, adjoining the great palace which is the seat of the Austrian Embassy to the Vatican, has been transplanted in order to give an uninterrupted view of the monument down the length of the Corso, one mile to the Porta del Popolo at the end, and the Via Flaminia. Though some may regret (says the Rome correspondent of the "Standard") the mediæval convent of the *Ara Cœli*, with its Gothic cloisters and its picturesque well, and the Tower of Paul III. at the end of the Corso, which were destroyed in order to make room for the monument, it must be acknowledged that Sacconi's pile is one of the finest architectural achievements of modern days, and nobly embodies the ideals and struggles of the most picturesque national uprising of the world of to-day. Some artists complain, however, of defects that are due to lack of unity of conception, and to the composite execution.

MAGAZINES AND REVIEWS.

The "Art Journal" contains representations of several lithograph sketches of American city scenes, by Mr. Pennell, a sketch of Brooklyn Bridge, rather rugged, forming the frontispiece to the number. All the sketches, however, display this artist's usual facility in effect and composition. Mr. Rudolf Dircks writes a criticism on the Royal Academy, with illustrations of a good many of the leading pictures. An unsigned article on "Domestic Decoration" treats this large subject rather briefly, and seems to be merely written to accompany some illustrations showing "how to approach commonplaces from an artistic standpoint," which is no doubt part of the function of domestic decoration. Among the examples given the best are a painted frieze on linen, by Mr. T. R. Spence, and an interior of a dining-room, with a specially treated ceiling, by Mr. Guy Dawber.

The "Burlington Magazine" contains an article of a very grudging character on the National Gallery and British Museum extensions. The writer seems to think that external architectural treatment of an art museum is of no consequence so long as the interior is all right; an opinion in which we certainly cannot concur; but it seems to be the special rôle of the "Burlington" to belittle all architects. On the other hand, the complaint that the new rooms at the National Gallery are ill-lighted is quite unjustifiable; the fact is that the architectural treatment (by the Office of Works) is rather commonplace, and the lighting very good; so much so that some old favourites in the gallery seem to come out with quite a new and unexpected effect. "Some Features of Mexican Architecture" is really a review of a book on the subject, but the illustrations given of this strange and *bizarre* architecture, in which barbaric surface ornament is mingled with crude forms of column, looking like reminiscences of classic forms, are of considerable interest.

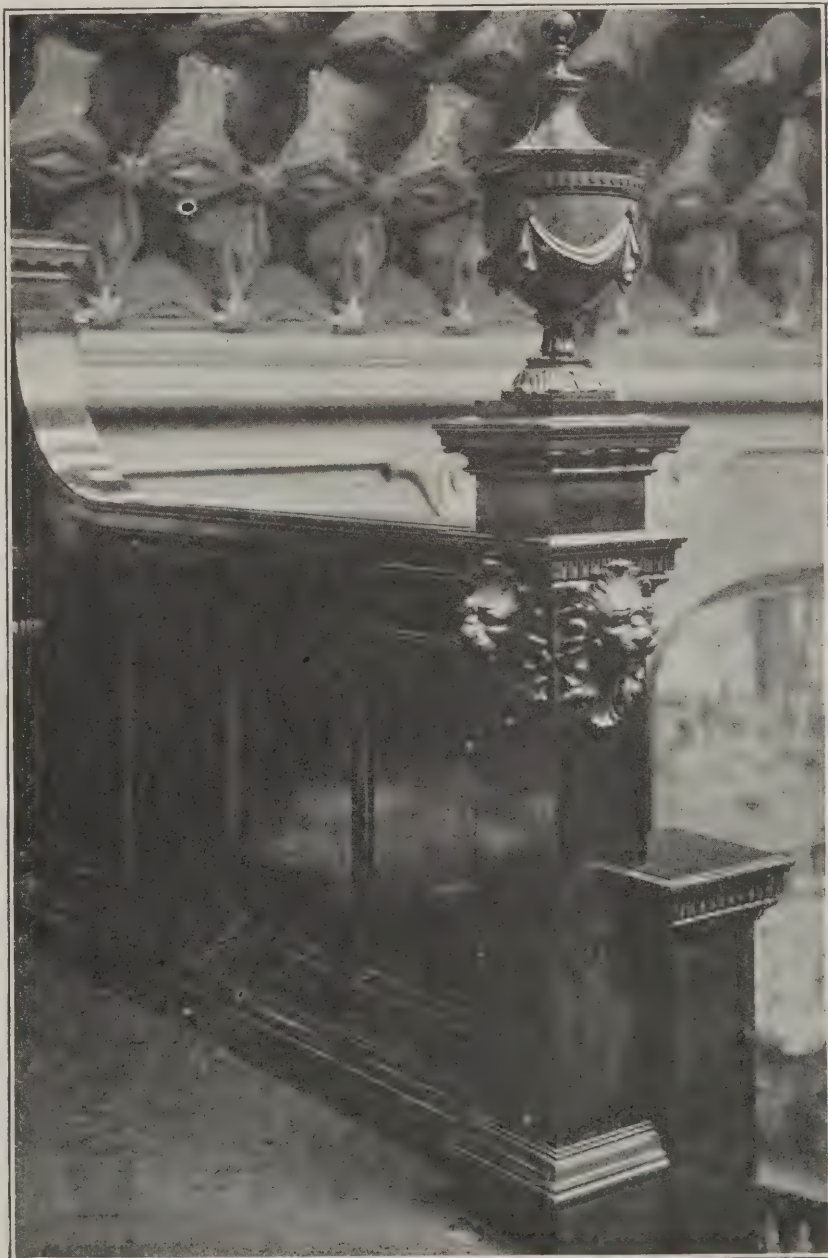
Considering that this is the time of exhibitions, the general magazines contain remarkably little about art; but the "Nineteenth Century" contains a criticism on the Salon and the Royal Academy, by Mr. H. Heathcote Statham, expressed in the form of conversations between three people, two English amateurs and a French painter,

who to some extent represent French and English views in regard to painting. M. de Latélier, the Frenchman, is very satirical on the architectural front of Burlington House, as compared with his own grand Palais des Beaux-Arts; and while admiring many of the English pictures, suggests that this seems to him an academy of painting, where sculpture and architecture are only admitted on sufferance. He thinks the Academy should buy out the learned societies and connect the two wings of Burlington House with the centre block, as picture galleries, and roof over the courtyard as a sculpture court. After this was done, it would remain to erect a façade to Piccadilly in the highest style of architecture, to make a fitting façade to an Academy of Arts. To the question of the English lady, whether he had seen our national monument to Queen Victoria, he replies "Yes, yes, I saw it; quite national; very English, very."

"Scribner" contains an article on Versailles under the title "The Gardens of Apollo"; an article rather literary than artistic; but there are some effective illustrations of features in the Versailles gardens, as seen under special lights. Under "The Field of Art" we learn that a

museum of Spanish art is one of the latest additions to the artistic attractions of New York. Velasquez and Goya appear to be well represented there.

The "Antiquary" contains an interesting article by Mr. W. Ravenscroft, accompanied by two plans, on the church of All Saints, Milford (Hants); a church which shows two curious features—the nave has been lengthened and widened, at what is now the third bay eastward, by spreading the arches at an oblique angle; and the western tower has a lean-to chamber or aisle on the ground storey, to north and south of the Tower. The suggestion as to the reason for this latter feature does not come into the present article (which is to be continued), but the author gives reason for thinking that the original church had a central tower, with a short apsidal chancel eastward of it. The conclusion is drawn from details in the existing architecture, which are described at some length. The western tower is of early thirteenth century date. The question is: was it built after and in consequence of the fall of the central tower, or had the church at one time two towers? The latter is, of course, a most unusual arrangement in a comparatively small



DETAIL OF NEW STAIRCASE, NO. 100, OXFORD STREET, LONDON, W.

church. We may observe, by the way, that neither plan has any scale to it, and the marginal note, "scale 8ft. to in.," has been allowed to remain, although on the reduced size of the plans it is manifestly absurd. This forms one more illustration of the advisability of always putting a drawn-out scale on a plan, instead of merely writing down the scale on the margin. In the same issue Mr. Tavenor Perry writes a short article on "Hittite Sculpture and Italian Portals," the point of which is that the employment of lions as supports for the bases of columns may be traced to remains in Syria and Asia Minor. We might go further back than that for the origin, for there is an Assyrian bas-relief showing columns supported on the backs of animals, a point which we have never seen noticed anywhere as yet.

THE CORONATION DECORATIONS.

Westminster is, of course, the central area of the Coronation decorations, and the work, which has been entrusted to five different firms, is estimated to cost about £10,000. It is now sufficiently advanced to afford a fair idea of the final effect. The following condensed account of what is being done will be found interesting and useful:—

Whitehall.—J. M. Boekbinder and Co. have erected parallel rows of white pillars (sixty in all, each 25 ft. high) with green festoons between. On each pillar there is a wreath containing armorial bearings, each of a different British monarch, from William the Conqueror to George V. The pillars are alternately surmounted by a winged griffin and a figure of Victory, both gilded. At each end of the line is a pair of higher pillars, 35 ft. high, topped with a lion 6 ft. 6 in. high, supporting the Westminster arms. In the centre of Whitehall is a triumphal arch designed for the New Zealand Government by Frank Brangwyn, A.R.A. It is 35 ft. high and 40 ft. wide, of imitation grey stone to match the surrounding buildings, and is draped with crimson and gold. The pilasters bear medallions showing portraits of King George V. and Queen Mary, King Edward VII. and Queen Victoria, Captain Cook and Sir Joseph Ward, the New Zealand Prime Minister. Opposite Downing Street the Government of Ontario has erected two pylons, 40 ft. high, bearing the arms of the Province. Bridge Street, Parliament Square, and Broad Sanctuary up to Victoria Street have masts and festoons, and the scheme, including the entrances to the Abbey, has been executed by Messrs. Talbot.

Pall Mall.—This district, including the north side of Trafalgar Square, and Duncannon Street as far as the Strand, shows masts, alternately tall and short, surmounted by crowns entwined with laurel, and having hanging baskets of flowers.

Piccadilly.—St. James's Street is being decorated by a committee of inhabitants. White, slender Ionic columns at 50 ft. intervals on each side, are joined by festoons of evergreens and roses, baskets of roses hanging from the middle of the festoons that cross the street. The end masts are topped with figures of Victory, the rest being crowned by vases of roses. At the top of the street is a floral bell or bouquet of pink and white flowers, 12 ft. across, under which the procession will pass. For Piccadilly proper, P. Turpin and Co. are carrying out designs by Sir W. Richmond, Mr. Frank Brangwyn, and other artists. Crowned masts joined by green festoons will line the paths, and there will be illuminations at night.

BUILDING METHODS IN EGYPT.

In proposing a vote of thanks to Mr. Ernest Richmond for his paper on the above subject (read before the R.I.B.A., on Monday, the 12th inst., and reported in our last issue), Mr. R. Weir Schultz said that no one was more qualified to speak on the subject than Mr. Richmond. It seemed only the other day that they were congratulating him upon his appointment, with Mr. Somers Clarke, in the investigation of the Coptic monuments. After that Mr. Richmond became actively engaged in the repair of the mosques, and subsequently went to the War Office, where he had the opportunity of dealing with buildings for barrack purposes. The Department of Public Works ultimately secured his services, and he was now Director of Public Buildings in Egypt. When in Egypt four years ago he (the speaker) had examined buildings erected under the supervision of Mr. Richmond, and in all cases they were straightforward works suited to the purpose for which they were intended, and local conditions were utilised. In erecting buildings for Europeans, there was, of course, always the great difficulty of getting local workmen to work in methods which they did not understand. Craftsmanship was very much alive in Egypt, and tradition was still active; and it was a mistaken policy to attempt to import foreign and unsuitable methods of craftsmanship, an experiment which had been attempted in the movement for technical instruction in Egypt some time ago.

Professor Flinders Petrie, seconding the vote of thanks, said that the better condition of the houses in Upper Egypt was not to be attributed solely to climate. The population of Lower Egypt was almost entirely Arab, while that of Upper Egypt was largely Coptic. Some little credit was due, therefore, to the superior character of the people. Having referred to a few details in the construction of Egyptian buildings, Professor Petrie recalled how the ancient Egyptians built their walls sometimes in a corrugated manner, so as to allow for expansion and contraction. He believed they employed the parabolic arch in order to avoid the crushing tendency involved in the use of the flat arch. The practice of using timbering in walls was very ancient, and he had found examples that were probably built before the time of the Pyramids. White ants were a great nuisance in the country, and he knew of buildings in the Delta and in Upper Egypt that had been completely ruined by the destructive white ant. The best way to ward off the pests was to soak the ground with petroleum or paraffin. Salt was not very deep down, and always rose to the surface of the ground. He had known of whole blocks of granite reduced to mere crystals by the agency of salt. Concluding, the speaker suggested that if it was desirable to keep the heart of the wall damp, the best thing to do was to put a damp course on the face of the wall, which would prevent the salt from getting to it.



CHINA SHOWROOMS, NO. 100, OXFORD STREET, LONDON, W.
GEORGE HORNBLLOWER, F.R.I.B.A. ARCHITECT

Mr. Somers Clarke considered it rather presumptuous that we should assume a dictatorial attitude towards people who were highly civilised when we were blue-painted savages. Referring to the movement in walls, the speaker said that vertical cracks were almost sure to appear over windows situated at intervals of 8ft. or 10ft. in a length of wall. The cracks appeared to be a safeguard rather than a danger.

Mr. Phené Spiers said that Mr. Richmond's paper seemed to corroborate M. Choisy's conclusion with regard to apertures. He was glad that Mr. Richmond had been appointed keeper of Public Monuments, and he deplored the laxity that had hitherto been so apparent with regard to their preservation.

Mr. Ernest Richmond, in reply, said that surface vertical damp-proof courses had been tried on old buildings with very great success. They were usually made of bituminous sheeting, and prevented the crystallisation of the salt.

M. Cannizzaro, Hon. Corresponding Member for Italy, drew attention to the Architectural Congress to be held in Rome from October 2nd to 10th, in celebration of the jubilee of the Unification of Italy. He trusted that many English architects would be present, and he hoped to take them to Venice and to show them the Tower of St. Mark's finished.

R.I.B.A.

THE ANNUAL ELECTIONS.

At the business general meeting of Monday, June 12th, the officers, Council, and standing committees for the ensuing session were declared duly elected, in accordance with the scrutineers' reports, as follows:—

THE COUNCIL.

PRESIDENT.—L. Stokes.

PAST-PRESIDENTS.—T. E. Colcutt; E. George, A.R.A.

VICE-PRESIDENTS.—Reginald Blomfield, A.R.A.; E. Guy Dawber; E. Newton, A.R.A.; J. W. Simpson.

HON. SECRETARY.—H. T. Hare.

MEMBERS OF COUNCIL.

Brierley, W. H.	Lutyens, E. L.
Cave, W.	Prynne, G. H. Fel-
Clarke, Max.	lowes.
Flockhart, W.	Ricardo, H. R.
Gibson, J. S.	Thomas, Sir A.
Gotch, J. A.	Brumwell.
Green, W. Curtis.	Wimperis, E. W.
Hall, E. T.	Woodward, W.
Hubbard, G.	Worthington, P.
Keen, A.	Scott.
Lanchester, H. V.	

ASSOCIATE MEMBERS OF COUNCIL.

Greenslade, S. K.	Warwick, S.
Tapper, W. J.	Wills, H. W.
Triggs, H. Inigo.	Wilson, A. N.

REPRESENTATIVES OF ALLIED SOCIETIES. Charlewood, H. C. (Northern Architectural Association).

Kitson, S. D. (Leeds and Yorks Architectural Society).

Wood, E. (Manchester Society of Architects).

Jerman, J. (Devon and Exeter Architectural Society).

Mitchell-Withers, J. B. (Sheffield Society of Architects and Surveyors).

Murray, A. E. (Royal Institute of the Architects of Ireland).

Wilkie, W. F. (Dundee Institute of Architecture).

Wilson, C. L. (Cardiff, South Wales, and Monmouthshire Architects' Society).

Wood, J. A. (Bristol Society of Architects).

REPRESENTATIVE OF THE ARCHITECTURAL ASSOCIATION.—Horsley, G. C.

AUDITORS.—Hudson, J.; Burt, W. H.

THE STANDING COMMITTEES.

ART.

Fellows.

Brewer, C. C.	Horsley, G. C.
Brierley, W. H.	Lucas, T. G.
Cave, W.	Lutyens, E. T.
Flockhart, W.	Newton, E.
Forsyth, W. A.	Rickards, E. A.

Associates.

Greenslade, S. K.	Triggs, H. Inigo.
Joass, J. J.	Warwick, S.
Tapper, W. J.	Wilson, A. N.

LITERATURE.

Fellows.

Baggallay, F. T.	Ricardo, H. R.
Gotch, J. A.	Spooner, C. S.
Green, W. Curtis.	Thomas, Sir A.
Niven, D. B.	Brumwell.
Prynne, G. H. Fel-	Warren, E. P.
lowes.	Waterhouse, P. L.

Associates.

Millard, W.	Smith, C. Wontner
Passmore, H.	Stratton, A. J.
Sayer, C. E.	Wills, H. W.

PRACTICE.

Fellows.

Ayling, R. S.	Peach, C. S.
Clarke, H. Chat-	Perks, S.
feild.	Searies-Wood, H.
Cross, A. W. S.	D.
Garbutt, Matt.	Tanner, H., jun.
Moore, A. W.	Woodward, W.

Associates.

Gammell, K.	Langston, H. H.
Horsfield, J. N.	Shepherd, H.
Hutchinson, C.	Woodington, H. A.

SCIENCE.

Fellows.

Adams, H. P.	Hornblower, G.
Clarke, Max.	Hubbard, G.
Farrow, F. R.	Murray, J.
Flint, E.	Smith, R. Elsey
Gilbert, H.	White, W. H.

Associates.

Elkington, G. L.	Wonnacott E. W.
Marshall, C. J.	M.
Munby, A. E.	Young, E. A.
Solomon, D. L.	

COMPETITIONS.

New Town Hall, Riga.

The "Standard" states that Riga is about to build a new town hall, and invites plans from architects all over the world, offering premiums of £600, £400, and £200. The building is to cost £100,000.

Manchester Library and Art Gallery.

We have been officially informed that, on the advice of Mr. Reginald Blomfield, A.R.A., in conjunction with the City Architect, the City Council have selected ten designs, prepared by the following competitors, to take part in the final competition (the names being arranged in alphabetical order):—Messrs. H. Percy Adams and Charles H. Holden, 28, Woburn Place, Russell Square, London, W.C.; Mr. Robert Atkinson, 2, South Square, Gray's Inn, London, W.C.; Messrs. Bradshaw and Gass, and Mr.

Arthur J. Hope, 19, Silverwell Street, Bolton; Messrs. Cooper and Slater, 13, Richmond Terrace, Blackburn; Messrs. Crouch, Butler, and Savage, 39, Newhall Street, Birmingham; Mr. R. Fielding Farrar, 10, Park Row, Leeds; Messrs. A. Graham Henderson and John R. Hacking, 144, St. Vincent Street, Glasgow; Mr. Frank W. Simon, May Buildings, North John Street, Liverpool; Messrs. Warwick and Hall, 13, South Square, Gray's Inn, London, W.C.; Messrs. Thomas Worthington and Son, 46, Brown Street, Manchester. The cost of the building is not to exceed £250,000.

New Police Station and Courts, Stockport.

For these new buildings, to be erected in Wellington Street at a cost of £25,000, a limited competition is to be held among eight local architects who submitted their names, and the following:—Henry T. Hare, Edwin Cooper, Wills and Anderson, Mountford and Clapham, S. B. Russell—of London; Everard, Son, and Pick, Leicester; J. P. Osborne, Birmingham; Appleyard and Quiggin, Liverpool; H. Beswick, Chester; Cheers and Smith, Blackburn; T. Kershaw, Halifax; W. and T. R. Milburn, Sunderland; Woodhouse, Corbett and Dean, Potts, Son, and Hennings, and G. H. Willoughby—Manchester (the last-named jointly with Alfred Cox, London); Perkin and Bulmer, Leeds; Stones, Stones, and Atkinson, Blackburn.

LIST OF COMPETITIONS OPEN.

JUNE 28. TECHNICAL BUILDINGS, NEWTON ABBOT.—The Governors of the Seale-Hayne College invite designs and estimates for buildings for agricultural and technical instruction. Premiums of £100, £50, and £30 are offered. Mr. C. Steward Smith, F.R.I.B.A., is the assessor.

JULY 1. CHAPEL AND SCHOOLROOMS, SWANSEA.—Competitive designs are invited for a chapel, schoolrooms, and class-rooms at the junction of St. Alban's Road and Finbury Terrace, Swansea.—Particulars from D. Walters, 19, Brooklands Terrace, Swansea.

JULY 31. ELEMENTARY SCHOOL, LOWESTOFT.—Premiums of twenty, ten, and five guineas are offered by Lowestoft Education Committee for designs for an elementary school for 500 boys, to be erected at Roman Hill. Particulars on payment of 10s. 6d. Applications to be received not later than June 24. Designs to be sent by July 31. Address, R. Beattie Nicholson, Town Clerk, Town Hall, Lowestoft.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

No date.—NEW BAPTIST CHURCH, NOTTINGHAM.—Nottingham architects wishing to enter a limited competition for plans of a new Baptist church and premises are requested to communicate with Messrs. Rorke and Jackson, solicitors, King Street, Nottingham.

Alteration of Title.

We are informed that the name of the Patent Indented Steel Bar Co., Ltd., has been altered to the Indented Bar and Concrete Engineering Co., Ltd. The business of the firm will not be altered, but will be carried on under the new name at the same address—Queen's Anne's Chambers, Westminster.

PARLIAMENT
AND ST. PAUL'S BRIDGE.

In the House of Commons on Wednesday last, on the motion for the third reading of the Corporation of London (Bridges Bill),

Mr. Morrell moved: "That the Bill be re-committed to the former Committee in respect of the clauses which relate to the construction of a new bridge between Blackfriars and Southwark Bridges; that it be an instruction to the Committee on the re-committed Bill not to agree to any scheme for the construction of the proposed new bridge until they are satisfied, first, that the scheme has been prepared under the advice and supervision of a competent architect or architects chosen from among the leading architects of the day; and, secondly, that the scheme, both in respect of architectural design and convenience of traffic, is the one best adapted to the public needs and the character of the site." He said that the scheme for the construction of this new bridge, at an estimated cost of £2,250,000, had not been sufficiently considered from the public point of view, and was not supported by a sufficient weight of evidence from those best qualified to speak on architectural town planning. In a great national concern of this sort the Corporation ought not to spend what was in effect public money without consulting the best expert advice. This was the greatest scheme of town-planning that they were likely to have for some time to come, but experts in town-planning had not been consulted. The City Corporation never called in an architect or expert in town-planning to advise them in setting out the scheme, and it was notorious that they had not been able to get a single architect of any authority to give his blessing to the scheme after it had been prepared. The promoters of the Bill stated that under their scheme there would be an imposing thoroughfare dominated by the Dome of St. Paul's. There never was a more misleading description of a scheme brought before the House. The only view of St. Paul's, if it were seen at all, would be a view of it over the intervening houses. Then it was said that the scheme ought to be accepted because it ought to be so good for traffic. But a direct rectangular crossing was not the best way of getting two great streams of traffic past one another. They were much more easily dealt with by means of an elbow. The rectangular scheme involved sixteen points of collision, whereas the elbow arrangement only involved six points of collision. It was said that the alternative proposals to the scheme of the City Corporation would necessitate the construction of a skew bridge across the Thames. People talked as if that made any alternative scheme impossible. It was not necessary in order to carry a road straight up to St. Paul's that there should be a skew bridge, but if the bridge were not quite at right angles to the river, was that really to be considered an insuperable and fatal objection to any alternative scheme? Some of the finest bridges designed by Brunel crossed rivers obliquely. Another objection to the alternative scheme was that the tramway proposal could not be carried out. But did the House realise that the proposed subway would be close to the foundations of St. Paul's? It was not beyond the limits of architectural skill where the road follows a little way round to the south side of St. Paul's, as shown in the architects' scheme, to construct a subway and pre-

serve the stability of the foundations of St. Paul's. Much play had been made by the promoters on the alleged extra cost by a million of an alternative scheme. But there was no evidence that there would be this extra cost. He had talked with architects and surveyors, and had been told there was no reason to suppose that carrying the road a little to the left to get a direct vista of St. Paul's would add more than 10 per cent. or 20 per cent. to the cost. Let the House realise the great opulence of the estate managed by the Corporation for the maintenance and building of bridges. There was a rental of £152,000 a year, and the income would largely increase as leases fell in. Upon a revenue of that sort there should be no hesitation about adopting a good scheme because of an additional expense of £100,000 or £200,000.

Lord H. Cavendish Bentinck seconded the motion. A bridge in the heart and centre of the capital should be built in a way worthy of an Imperial people. Nothing was more remarkable than the patience with which the people of London had submitted to architectural outrages. Much water had flowed under Westminster Bridge since Wordsworth declared he saw from it the finest view in the world, and since then we had built four or five of the ugliest railway bridges in the world. Every great opportunity had been missed, and every great highway had been considered, not with any artistic or æsthetic view, but in what Arthur Young called the baneful spirit of the counter. The spirit underlying this proposal was the same spirit that had provided the wilderness of mean streets, stuccoed villas, slums, and back-to-back houses, and the House of Commons which lately passed the Town Planning Bill would indeed stultify itself by sanctioning a proposal like this. He believed they ought to give this Committee a further opportunity of hearing architectural opinion on this subject, and it was from the point of view of the danger they were running of having a great eyesore inflicted on the people of London that he seconded the rejection of the Bill.

Mr. Mooney, as chairman of the Committee, said he wished to bring the House back to the facts of the case. The Institute of British Architects did petition against the Bill, but they did not think it worth their while to appear before the Committee, though he went out of his way to invite them to appear and give the Committee the benefit of their opinion. It was rather hard, therefore, to say that the Committee came to a decision on insufficient evidence and ought to sit again to hear the evidence of a body of gentlemen who had neglected the opportunity offered to them to come forward. He would have been far better pleased if the Institute of Architects had appeared before the Committee; but there was no official scheme put forward by them, and they all seemed to have different schemes. The Committee did put the scheme outlined in "The Times" as the scheme of the Institute to the traffic authorities, and they said that from their point of view it was an absolute impossibility. The scheme embodied in the Bill was the considered plan of those who would have to bear the cost of the bridge.

Sir F. Banbury said the crux of the question was whether there should be a slanting street from the bridge to the dome of St. Paul's or whether it should be a straight street. From the traffic point of view, a straight street was far more desirable. With a crooked street the traffic going from south to north would come to a dead stand opposite the dome of St. Paul's

and then it would either have to turn again and go east or go down Ludgate Hill. There would be two blocks of traffic instead of only one. The cost of buying the whole of Messrs. Cook's ground was estimated at £1,000,000. It was argued that the alternative scheme would open up a beautiful vista, but that vista would only be seen by the van drivers of the heavy goods traffic going from the south to the north. The Corporation Bill was going to relieve the congestion of traffic, and, after all, those people who had business to do in the City of London had some right to be considered. He had seen a plan of Sir Christopher Wren's which carried out the same idea, and he hoped the House would agree to the Corporation's Bill.

Sir W. Gelder entirely disagreed with the statement of the hon. baronet that the Bill of the Corporation was the only way in which traffic regulation could be properly adjusted. In his hand he held a plan by an eminent architect who had done a great deal of town-planning, showing how the scheme could be carried out with equal regard to the amenities of St. Paul's and the requirements of congested traffic. If this scheme was allowed to pass it would be one of the most fatal blunders in London architecture that had been committed for centuries. Indeed, it would be more than a blunder; it would be a positive crime, and cruel to posterity. The Cathedral was a national monument of which any nation might be proud, and surely the House did not wish to see repeated the blunder of the bridge across Ludgate Hill. The desire was to open out St. Paul's so that its beauties might be better seen and understood. In his view the Engineer of the Corporation had absolutely ignored the opportunity to obtain for London an advantage which would endure as long as the City endured. The Corporation had also ignored the advice of all those who were best able to give advice on the subject—the architects, artists, sculptors. He was not aware that any architect of any position had been able to back up the scheme, while the whole of the London Press had unanimously expressed strong objections to it. It was asked why the architects had not actively opposed the scheme. The architects petitioned against it and went no further. Why should the architects, as architects, actively interfere without being properly retained? Why should they spend their time on the subject of this kind any more than any other class of the community interested in the welfare of the City, and why should they be asked to contribute from their store of knowledge and of money more than the general public were asked to contribute? It was a lamentable thing that there were no public funds to defend public interests. He did not see why the architects should be asked to spend money in the public interest any more than any other class of the community. It was no more the duty of the architects to present an alternative scheme than that of any other class of people. But they did their best to influence the Corporation by deputation and by presenting a petition against the Bill. The hon. baronet touched the spot when he said that to bring the new street in a direct line with the centre of St. Paul's would be an enormously costly process. He was assured on authority that the additional cost would only be about £150,000 or £200,000, but even if it cost a million—which he traversed entirely—he submitted that in a matter of this sort, where Parliament was dealing with a work that would last for centuries, they ought to take a broad and not a narrow view. He tra-

versed entirely the statement that there was danger to the foundations of St. Paul's if any other scheme than this were adopted, and, with respect to the zone of danger which the Commissioner of City Police spoke about, he believed that the traffic could be quite as easily dealt with under any other scheme as under the scheme which had been passed by the Committee. It seemed to him a very great pity that, in a matter of this kind, the purely utilitarian view of the engineer alone had prevailed, and that no regard had been paid to the aesthetic character of the project and to the amenities of the City. When an opportunity like this arose, they did not want to repeat mistakes such as had been made before, because full and adequate consideration had not been given to the subject. He saw no reflection on the Committee in having the Bill referred back. They wanted all sides to be heard on this subject, and if the Bill went back evidence could be produced which would show that a scheme could be submitted which would give all the effect of a vista of St. Paul's, and also all the means of locomotion which were so much needed in the congested centre of London.

Mr. Lamb, speaking both as a member of the Corporation and the Bridge House Estates Committee, informed the hon. member who had just spoken that the architects had been heard by the Corporation. They had before them a deputation from the Institute of British Architects, which included the then president, Sir Aston Webb, Sir George Frampton, and others, and the present president, Mr. Leonard Stokes, had been heard before the Court of Common Council and the Bridge House Estates Committee. The Corporation wrote to the secretary of the Institute, informing him that they would not raise any objection to the Institute being heard on their petition, and what could they do more than that? Even if the Bill were recommitted, what guarantee had the Corporation that the architects would appear and be heard? It had been said that they would have to be represented by counsel, and that that meant expense. The Bridge House Estates Committee had considered this matter for years, and now presented a thoroughly prepared scheme after consultation with architects, and asked the House to give the Bill a third reading. By agreement with the London County

Council, the trams would come across the bridge. The Cathedral authorities had already successfully objected to a tube railway and a main drain going past the south front of St. Paul's, but under the alternative scheme the tramline subway, instead of passing under Carter Lane, would be carried much nearer to the Cathedral. If the alternative proposal were carried out, the piers of the bridge would have to be placed askew in order to fulfil the conditions which must be observed, and the difficulties which barge-men already had to encounter in getting under the Thames bridges would be greatly increased. Besides, would not a bridge built in this way offend the artistic sense? As to finance, if the alternative scheme were carried out, it would mean taking not a wing, but the body of the largest textile wholesale house in the world. The Corporation scheme would only necessitate taking 1-25th of the ground space of the warehouse. These premises had a floor space of five acres, and spread over eight streets, and were connected by bridges and subways, with post-office telephones and tramways. There were 3,000 hands employed, and with their dependants there were 12,000 people concerned in the work. To talk of removing a business of this kind was to talk of removing a town; it was ludicrous to talk of it. The alternative scheme suggested was not practicable.

Lord Balcarras was delighted to hear that the bridge was to be designed by a competent architect, but that was not the main point at issue; it was not the structure or design of the bridge, but the direction of the road leading to and from the bridge that was at issue. Surely a House of Commons which passed a town-planning scheme only a year ago and confessed by the passing of this Bill as it stood that that scheme was a dead letter would stultify itself. It was said that the bridge proposed in the alternative scheme would be a skew bridge. All architectural and town-planning precedents justified that when it was adopted to lead up to a monument of architectural pre-eminence. A skew bridge in this case would be more than justified by the fact that it would lead up to the great dome of St. Paul's and open up a vista which would very soon become a source of genuine appreciation to the scores of thousands of people who crossed the bridge. It was clearly an exaggeration to say that no tramway could follow anything but a direct route. Any one familiar with the London tramway system would agree that the authorities had never found any difficulty in laying a line along tortuous thoroughfares. He denied that there was any necessary conflict between the artistic and the utilitarian. If they made a mistake now it would be irretrievable, and 20 years hence it would be said that the House of Commons refused to pass this magnificent alternative scheme because it would be hurtful to the feelings of the members of a Committee.

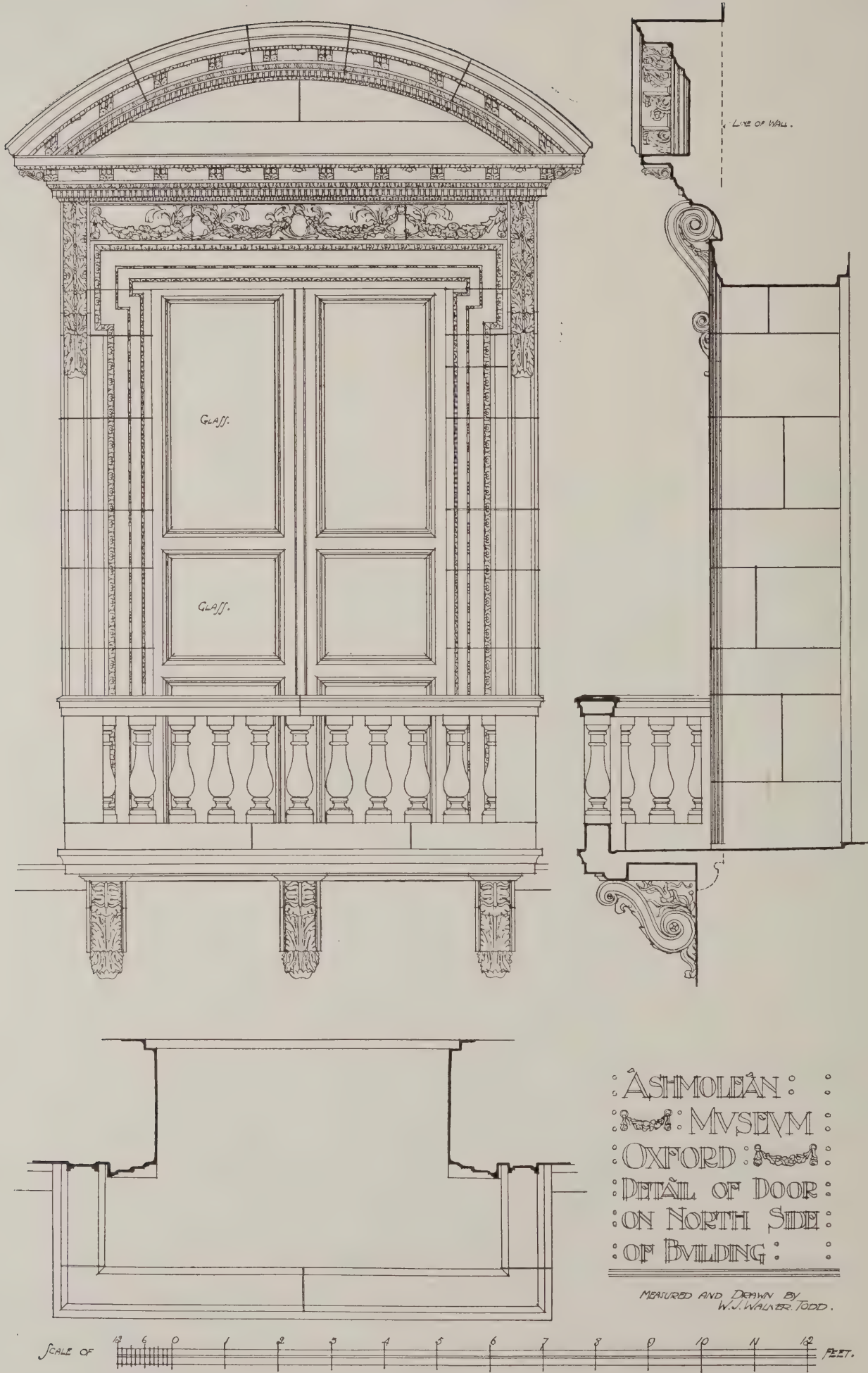
Mr. F. Hall, speaking on behalf of the London County Council, said that if the bridge were constructed so as to lead to the southern front of the Cathedral it would be impossible to join up the tramways from the north and the south of London, and in regard to other traffic there would be a block in the neighbourhood of St. Paul's. While not despising the artistic point of view, he regarded it as the first duty of the House to consider the provision of facilities for traffic.

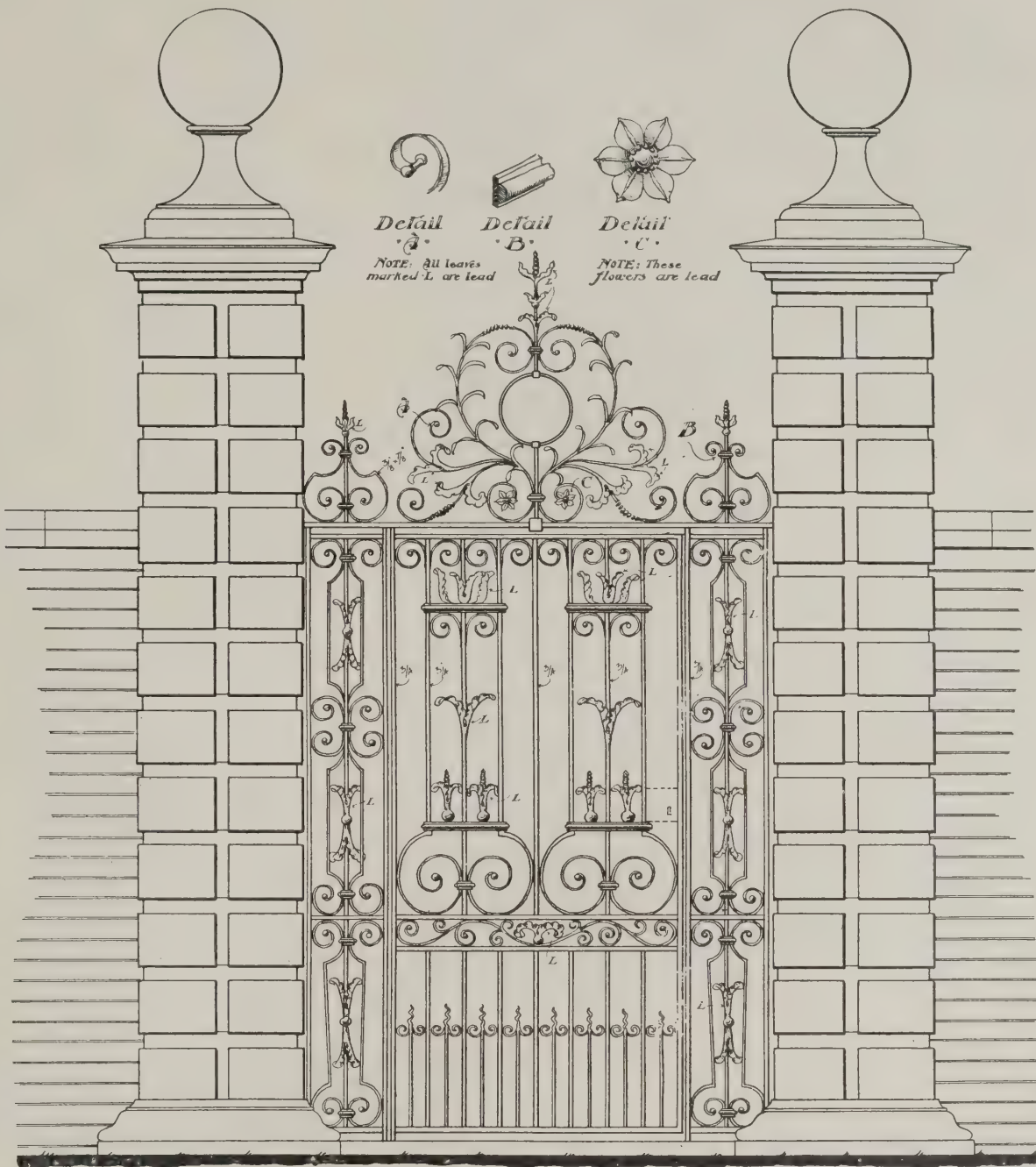
Mr. Essex pointed out that the City Corporation had considered the project



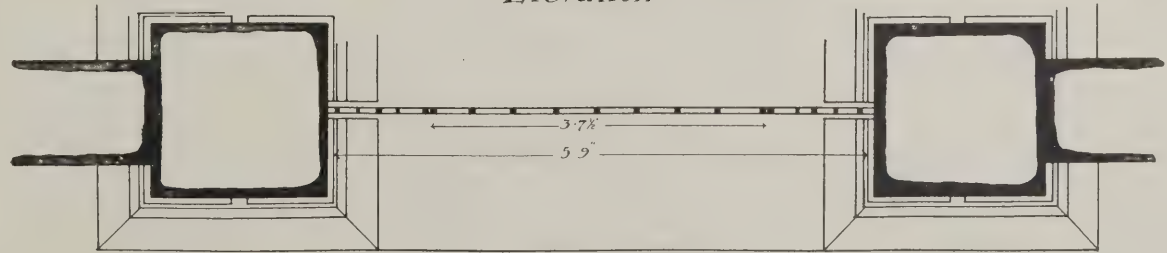
This font is one of the most interesting features of a church which is, to use Sir Gilbert Scott's words, "an epitome in stone of the history of England." Wootton Wawen is six miles from Stratford-on-Avon.

FOURTEENTH-CENTURY FONT IN WOOTTON WAWEN, WARWICKSHIRE.





•Elevation•



•Plan•



F. Spencer Muntz mens. et. del.

WROUGHT-IRON GATE AND PIERS, PRESTON-ON-STOUR, WARWICKSHIRE.



DOOR AND BALCONY, ASHMOLEAN MUSEUM, OXFORD.

from the utilitarian standpoint, and hon. members, therefore, might not lightly charge the Corporation with a lack of carefulness. But their charge was that the Corporation had not had the opportunity of considering all the artistic considerations involved in the scheme. He challenged the scheme also on the ground that it was inadequate. Wherever the bridge was put it should be the widest in London. Another mistake which had been made was in the incompleteness of the connexion between north and south, while owing to the tramway tracks and the three lines of traffic, the effective width of the bridge, as ordinarily considered, would not be realised. The City Council ought to have brought before them a more daring scheme; and if the Bill was sent back he hoped they would be encouraged to take the opportunity boldly by the hand and do the thing well.

Mr. Emmott, intervening as Chairman of Ways and Means, claimed that, as regarded engineering difficulties, traffic facilities, and cost, the advantage lay with the scheme of the Bill. On the other hand, there was a difference of opinion on the architectural merits and the adequacy of the scheme. He was not able

to dogmatise on this aspect of the matter, but would the vista of the alternative scheme be so wonderful as some hon. members who opposed the Corporation scheme made out? At all events, it was no part of Wren's original plan to have a broad thoroughfare leading up to the walls of the south transept. And he was not quite convinced that the matter was of such enormous importance as the opponents of the scheme would make out, but, whether it was or was not, he understood that the alternative of which they had heard so much as well as other alternatives were most carefully considered by the Corporation and the Bridge House Estates Committee before the scheme of the Bill was prepared. He asked the House to stand by the Committee and to pass the third reading of the Bill.

Mr. Lyttelton said the Chairman of Ways and Means seemed to him to have fallen into the error of treating a matter which was of immense importance to London as if it were a mere private matter of litigation between two parties. His proposition was that because the Institute of British Architects had not responded to the invitation of the Committee, London and the public of London were for all

time to be treated on the basis that such evidence was not forthcoming. Nothing could be more fundamentally wrong. The interest of the public in this matter was a great one. What had they to do with the default of the architects? He did not blame the Corporation. He believed they had behaved in a frank and generous manner to the architects. They did everything they could to get their evidence, which for some reason was not given. The Committee also were absolutely free from blame, and, indeed, deserved the cordial appreciation of the House. It was perhaps to be regretted that a representation was not made that the evidence of architects was necessary to enable a proper decision to be arrived at. The House would then have been able to order the attendance of any person whom it was considered necessary to summon. The result would have been a decision of the Committee based on full instead of imperfect information.

The House divided, and the numbers were:—

For the Recommittal	156
Against	99

Majority for 57

The instruction which Mr. Morrell proposed to move to the Committee on the recommitted Bill was afterwards amended in terms which, as may be seen from the citation on page 642, seem to suggest an ill-considered compromise.

DETAILS—OLD AND NEW.—XIII.

Doorway and Window, Ashmolean Museum, Oxford.

The old Ashmolean Museum, dating from 1677, is enclosed on the north side by the well-known series of clumsy piers carved with giant heads of Roman emperors, with a low wall and railings between. As a consequence, it is extremely difficult to obtain a photograph of the detail shown above. Without distortion, indeed, a side view cannot be obtained. The balusters are of new stone, but the remainder appears to be untouched. Some particulars of the building were given in our issue for June 7th, when a photograph and drawing of the entrance front were published.

Gate at Preston-on-Stour, Warwickshire.

Though now used as an entrance to the churchyard at Preston-on-Stour, this gate originally belonged to an old manor-house in the village, known as the "Hall," and the circle which surmounts the gate was then, no doubt, intended to receive the family arms upon a shield.

New Insurance Offices at Aberdeen.

A new building for the Royal Insurance Company has been erected in Union St., Aberdeen, from designs by Mr. Bennett Mitchell. It is built of white Kemnay granite.

Discovery of Roman Remains in the City.

During the progress of reconstruction work at 80a, Fenchurch Street, by a firm of contractors, several fragments of what appears to be Roman pottery have been discovered 10ft. below the surface. The pottery is of a rich dark red colour, and on the fragments are figures, clearly marked, representing gladiators, animals, and ornaments. There were also found one complete square tile and several fragments of what, it would appear, was a Roman urn, as well as two or three human bones.

CONCRETE AND STEEL SECTION

(MONTHLY.)

Professor Pite As recorded in last week's Journal, Professor Beresford Pite, F.R.I.B.A., read before the Concrete Institute on June 7th, in the Lecture Hall of Denison House, Westminster, S.W., a paper in "The Æsthetic Treatment of Concrete."

Simplicity of intention in constructional design, he said, may issue in a native or spontaneous æsthetic quality. An undesigned beauty reached without treatment is often attained by such a structure as the Forth Bridge or a reinforced concrete silo. Mediæval architecture grew up as a constructive method without æsthetic purpose, and achieved results of great beauty. Is not the opportunity given by the new process of reinforced concrete building one that could be utilised for the erection of the much-desired original and modern style of architecture? Are the new material and method together sufficient motive? Truthfulness of design to constructive purpose, and elemental soundness of proportion—are these sufficient to provide that pleasantness to the eye which is desiderated? Four conclusions were arrived at—1st, we have no instinctive guidance towards an unbiassed originality for a concrete architecture; 2nd, abstract principles like those invoked of proportion are of no assistance; 3rd, superficial treatments, as by colour, are insufficient for architectural expression, though valuable in assistance; 4th, the texture of concrete surfaces modifies and imparts special character to any forms employed for architectural purposes. Therefore, while modern considerations of utility and of novel constructional methods determine proportions and may ultimately develop æsthetic qualities, the scholarly and critical analysis and employment of traditional architectural forms suitably modified for execution in concrete is the proper method for the æsthetic treatment of concrete.

Decoration and Construction.

An historical review of the development of some characteristics of Egyptian, Greek, and Roman architecture furnishes proofs, said Professor Pite, of the non-relation of æsthetic treatment to direct constructive facts. Idealised representations of ancient types form the basis of both Egyptian and Greek characteristics, while the Romans frankly separated the decorative from the practical purposes of architecture. In Gothic art, however, the constructive craftsman was the artist, and the development of decoration is integral with building craft. In the other crafts of wood and plaster work, motives are imitated from stonework, and illustrate the modifications produced by the texture of the material in the design of details: of this the Elizabethan ornamental plastered ceilings originated from Tudor vaultings are illustrations.

The Future of Concrete Construction. Modern novelty of constructive method, Professor Pite contended, does not remove necessity for study of architectural development, but it will aid adaptation and modi-

fication, and thus pave the way for development. Modern Continental design is too eager to demonstrate the elasticity possible in employment of form in unusual architectural relations. At home we still are safely and timidly putting brick and stone fronts to concrete buildings. There is a great future before concrete building, and it deserves that close and patient architectural study which, deriving from the past, will give certainty to the future æsthetic treatment of the material.

Elasticity of Reinforced Concrete.

Among the interesting points that were brought out by Mr. Alfred E. Corbett, F.R.I.B.A., in his account of his experience in constructing the Y.M.C.A. building at Manchester, as described in his paper read at the summer meeting of the Concrete Institute, was that in reference to the surprising elasticity shown by a reinforced concrete flagstaff. This is 27 ft. high, 10 ins. in diameter at the base, and 6 ins. at the top, cast solid, and reinforced by six $\frac{1}{2}$ in. bars. It was severely tested four months after casting, when a very large triangular flag, 14 ft. high by 26 ft. long, was run up on a very gusty day, and its tail so fastened that the flag was at right angles to the wind. "I had," said Mr. Corbett, "a very surprising demonstration of the elasticity of reinforced concrete, as the flagstaff whipped about like a piece of lancewood." He could not take actual readings, as he dared not leave it under such a stress, but he estimated that it moved at least 4 ins. out of the perpendicular in each direction, which would be a deflection of one-eightieth of its length. There was no sign of cracking.

Acoustics of Reinforced Concrete Buildings.

Mr. Corbett made also, in the course of his paper, an interesting statement with regard to the acoustic qualities of the large hall—seating 900—of the Manchester Y.M.C.A. Before building, the architects were told by "apparently good authorities" the diverse opinions that (1) that such a hall built of reinforced concrete "would reverberate like a large drum, and (2) that it would be so "dead" as to be very bad for sound. The second pronouncement turned out to be nearer to the truth, and therefore the architects added as much resonant material as possible in the shape of hollow fibrous plaster ceilings and gallery fronts, and thin fibrous plaster slabs fired out from the walls of gallery and back of platform. The main floor is woodblock solid on the concrete, but the platform floor is specially constructed of oak boards on thin bearers and counter-bearers to give the maximum resonance. The acoustical results proved to be very satisfactory, the hall being exceptionally good for speaking, and only slightly inferior for music. This is valuable experience, and the Concrete Institute were fortunate in obtaining, for once in a way, a lecturer who was content to give a plain narrative of actual experience instead of theorising, arguing, and disputing, as is the engineering habit. Mr. Corbett thus gave one more proof that, as a rule, the

architect is a much more interesting—and, on the whole, a more instructive—lecturer than the engineer.

Mr. Dunn's Lectures.

The University of London Press has not been very long established, but it seems destined to justify its existence by acquiring a very distinctive character of its own, if the volume that has just come to hand may be taken as an indication of the line that is to be pursued. It is a volume of lectures on reinforced concrete delivered at the Institution of Civil Engineers last November by Mr. William Dunn; and obviously it would be difficult to hit upon a subject that, while possessing the same degree of freshness and novelty, would admit of an equally happy blending of scientific with practical interests. The lectures are six in number, and deal respectively with (i.) columns and compression members, (ii.) beams, (iii.) retaining walls, (iv.) bridges, (v.) quantities and costs, and (vi.) failures; while there is an appendix on the graphical solution of the continuous girder, and another on the half-dozen diagrams (for the solution of T-beams) which are tucked into a pocket in the cover of the book.

The Apathy of Architects.

The author, being consulting engineer for reinforced concrete construction to H.M. Office of Works, and having already made most valuable contributions to the literature of the subject, it was a foregone conclusion that these lectures would be well worth publication in book form; and the resultant volume, modest in price (7s. 6d. net) and in size (142 pages, 8 $\frac{3}{4}$ ins. by 5 $\frac{1}{2}$ ins.), does not disappoint the expectation. It is what may be called an excellent first sketch of the subject, affording the beginner a very clear and fairly comprehensive idea of the general nature of the work, its history, principles, and applications. In a later edition of the book, no matter how soon it may come, the complaint of apathy contained in the introductory paragraphs will have become, let us hope, entirely irrelevant. "The good qualities of reinforced concrete," says Mr. Dunn, "and its applicability to engineering works, were recognised years ago by the engineers of almost every country but our own. . . . When we look abroad and see the Grafton arched bridge of 350ft. span in Auckland, New Zealand, or hear of the new bridge of 328ft. span now begun over the Tiber at Rome, and remember that the largest stone arch in the world is only 295ft. span; when we see reinforced concrete grain silos on an enormous scale replacing steel and wooden silos; when we see its use in sewers, culverts, piles, and in a hundred other ways, we realise that it is time the engineers of this country woke up."

Left to the Engineer.

While Mr. Dunn is about it, his *réveille* might just as well be sounded in the camp of the architects, upon whom the engineers appear already to have stolen a long march. Even when, as in Professor Beresford Pite's recent lec-

ture at the Concrete Institute, the architectural interest is accorded special attention, the architects give no sign that they are fully awake to the importance of the subject. It is rather difficult to account for this apathy. Possibly the bulk of the profession are waiting for a lead which they are not very likely to get. They are of gregarious habits, and love to follow the example of the heads of the profession, who, however, are as a rule too deeply engaged on the æsthetic side to care very much about what is done in reinforced concrete, or who does it. Now that facilities for studying this method of building are being multiplied, the architect should take care to avail himself of them to the full. Mastery of all that is known of the method is apparently not very difficult to acquire; and, unless the architects are contented to let a large proportion of the building work of the future pass into the hands of the engineer, it will be necessary to make competent knowledge of reinforced concrete systems a commonplace item in the equipment of every architect. To this end the curricula of some of our architectural schools should be judiciously revised, not to say drastically modernised.

Some Causes of Failure. In the chapter on failures Mr. Dunn deals with the liabilities under five heads—namely, from (1) errors in design, (2) defective material, (3) improper workmanship, (4) deterioration through age or external causes, and (5) causes which cannot well be foreseen or properly provided for. These are discussed in considerable detail, the author rightly assuming that “in no class of work is there more need for sound and extensive theoretical knowledge, and of the basis and limits of theory, combined with sound judgment”; which is, perhaps, why the older architects prefer to leave the work to specialists. But there is no reason why the younger men should not acquire this theoretical knowledge and exercise this sound judgment.

Influences of Temperature. A remark upon the influences of the weather on reinforced concrete construction probably surprised some of those who listened to the lecture. “In this country,” said Mr. Dunn, “the days in a year in which the temperature is too low are comparatively few, and we suffer more from laying concrete in too hot weather. Wherever you have to lay concrete in hot weather you may expect cracks, and every possible means should be adopted to shield it from great heat. . . In thin parts these cracks may appear in a few weeks’ time; in thicker parts, as in the arches of bridges or retaining walls, the concrete loses the heat more slowly, and the cracks do not appear for months afterwards.” Where the cause and effect are so widely separated, it is quite possible that the slowly developing cracks are not always correctly attributed. The lectures contain, *passim*, many similar hints, obviously drawn from close and patient observation and large practical experience; and, on the whole, the book in which they have been reproduced is an excellent persuasive and stimulus to the study of reinforced concrete construction. It is published for the University of London Press, Ltd., by Hodder and Stoughton, Warwick Square, E.C.

CALCULATIONS OF
REINFORCED CONCRETE
BEAMS AND SLABS.

BY ARTHUR MATTHEWS.

The object of this article is to put in a practical form the theories and calculations involved in the working out of reinforced concrete beams and slabs. It is thought that the formulæ and diagrams here given are sufficient for practical work, and it is not intended that they should be looked upon as a complete exposition of the theories of reinforced concrete design. Such treatment of the subject would not only expand this article to an unreasonable length; but would also make it unnecessarily complicated for practical work.

To those who have studied this subject, the curves will be self-explanatory; but for the benefit of others, a brief explanation of the principles upon which the diagrams are based will be necessary. The formulæ used in this article are the simplified ones prepared by Prof. Unwin, and appearing in the Report on Reinforced

Concrete of the Joint Committee of the R.I.B.A. and other bodies.

Position of Neutral Axis.

The most important factors necessary to determine the position of the neutral axis (NA) and the distribution of stresses between the concrete and steel, are:—The percentage of steel to concrete, and the ratio of the modulus of elasticity of the steel to the modulus of elasticity of the concrete, i.e.:— $\frac{E_s}{E_c}=m$. Given the percentage of steel and the value of “m” the position of N.A. may be found by

$$k = \sqrt{(p^2 m^2 + 2 p m)} - p m \dots \dots (1)$$

where

$$p = \frac{\text{area of steel}}{\text{area of concrete}} = \frac{\text{percentage of steel}}{100}$$
$$m = \frac{E_s}{E_c} \text{ may be taken as } 15$$

d = Depth of beam from upper surface to centre line of reinforcement
kd = Distance of N.A. from upper surface of beam.

Having found the position of the N.A. the ratio of $\frac{\text{tension in steel}}{\text{compression in concrete}}$ can

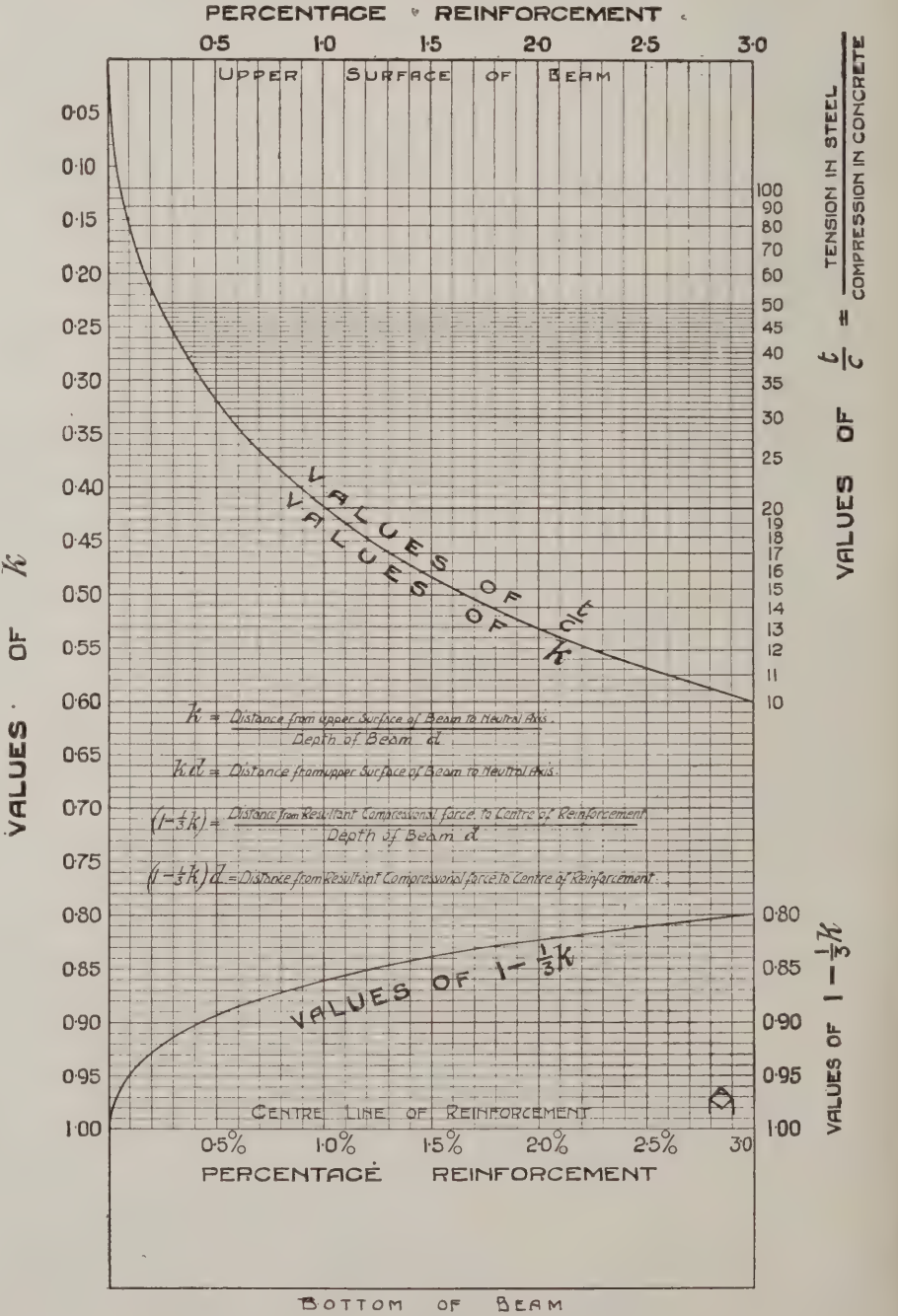


Fig. 1.

be found by.—
 $\frac{t}{c} = \frac{m(1-k)}{k}$ (2)

where
t=Intensity of tensile stress in steel
c=Intensity of compressive stress in concrete.

By equating this formula in terms of "k" we have that, given the allowable stress in the steel and concrete, and the value of "m,"

$k = \frac{mc}{t+mc}$ (3)
i.e.:— $kd = d \frac{mc}{t+mc}$

It then follows from (1) that, given the area of steel i.e.:—"p" and the area of concrete i.e.:—"p" and the value of "m," the position of the N.A. is fixed. The N.A. being fixed, $\frac{t}{c}$ is also fixed, and is found by (2) or given t, c and m, the depth of N.A. from upper surface of beam "kd" can be found by (3).

Fig. 1 shows the value of
 $k, \frac{t}{c}$ and $(1 - \frac{1}{3}k)$
i.e.:—Distance of resultant compressive force to centre of reinforcement
depth of beam d

deduced from formulæ (1) and (2) and calculated for areas of reinforcement up to 3 per cent.

From this curve (Fig. 1) it will be seen that, as the percentage of reinforcement increases, the distance of N.A. from upper surface of beam becomes greater, obtaining thereby an increase in the area of concrete in compression, and a subsequent increase in strength of the beam; but this increase in strength is not directly proportioned to the increase in area of the steel; for as the percentage steel increases, the ratio of $\frac{t}{c}$ decreases, which means that

the increased area of steel available cannot be stressed to its working limit without exceeding the given stress in the concrete. This will be better understood upon reference to Fig. 2.

With a fixed percentage of reinforcement, the moment of resistance (M) of a reinforced concrete beam with tensile reinforcement, varies directly as $b d^2$, where

b = Breadth of beam
d = Depth from upper surface of beam to centre line of reinforcement.

Therefore we can express the moment of Resistance (M) as:—

$M = Kbd^2$
from which
 $K = \frac{M}{bd^2}$
 $b = \frac{M}{Kd^2}$
 $d = \sqrt{\frac{M}{Kb}}$ (4)

where K is a moment factor.

The values of the moment factor K are shown on Fig. 2 for reinforcements up to 3 per cent., with values of "c" from 500 to 800 lbs. per sq. inch, and with values of "t" from 14,000 to 17,000 lbs. per sq. inch.

Given the allowable stress in the steel and concrete, the most economical percentage of steel, as regards stress, will be where the curve of given stress in the concrete meets the curve of given stress in the steel. For instance (Fig. 2) when c=600 and t=17,000, the area of reinforcement = .61 per cent. Again, when c=600

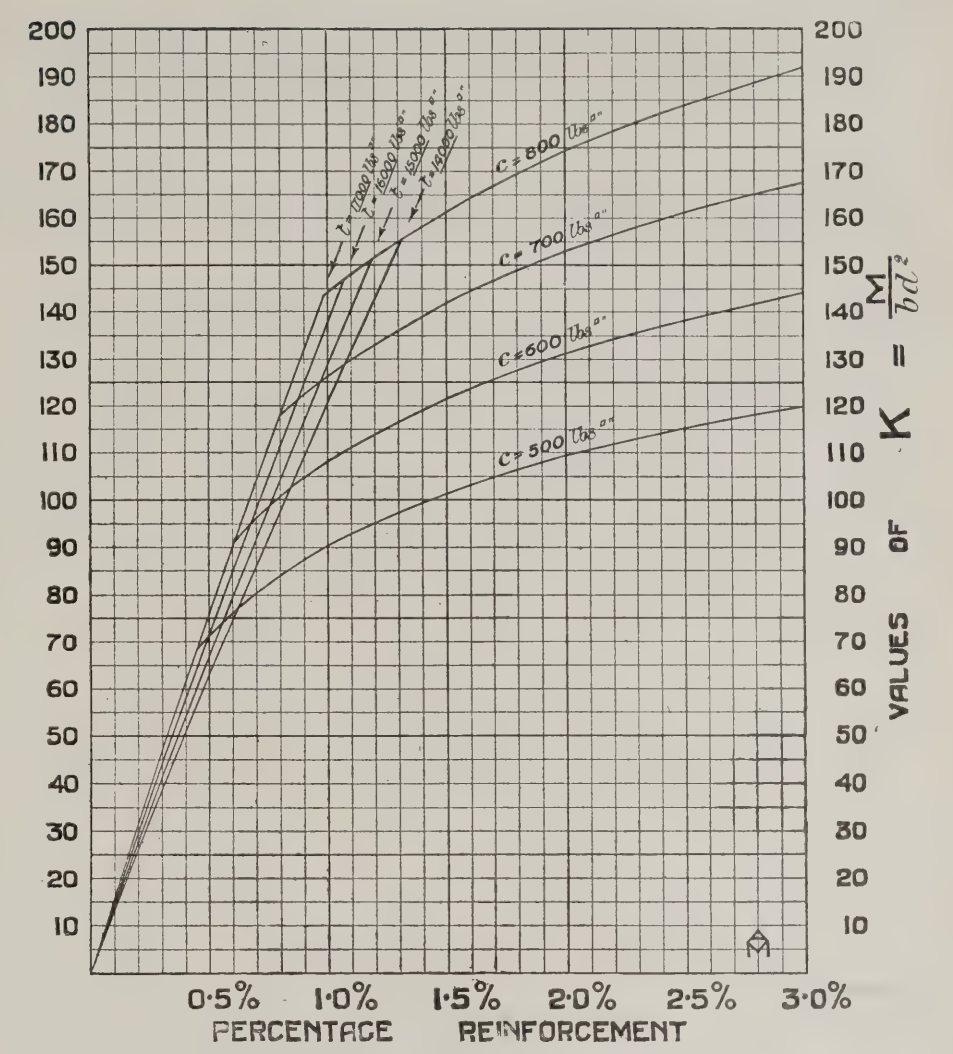


Fig. 2.

and t=1,600, area of steel=.68 per cent., and so on.

These values can also be found from Fig. 1. Suppose, for instance, we wish to ascertain the stress set up in the steel of a beam with 3 per cent. reinforcement, given an allowable stress in the concrete of 600 lbs. per sq. inch.

Referring to Fig. 1, we find that with 3 per. cent steel $\frac{t}{c} = 10$, so that

$\frac{t}{c} = \frac{t}{600} = 10$

∴ t=10×600=6000 lbs per square inch.

Referring again to Fig. 2, let us look at the comparative increase in percentage of reinforcement and strength of a beam.

From the formula $M = Kbd^2$ it is obvious that the strength of a beam is directly proportional to the moment factor K. Assuming c=600 and area of steel=.61 per cent., we get a value for K of 91.94. With 3 per cent. steel K becomes 144, so that although with 3 per cent. steel we increase the area of reinforcement in the proportion of 1 to 5, the increase in strength (or moment factor K) is in the ratio of $\frac{144}{91.94}$ or as 1 : 1.6. It is clear,

therefore, that an increase in the area of steel does not produce a proportional increase in the strength of the beam.

Fig. 3 will be found to be more or less self-explanatory. This shows values of M for beams up to 40in. deep and up to 20in. wide. It must be clearly understood, however, that Fig. 3 applies only to beams with 0.61 per cent. reinforcement, where values of t and c equal 17,000 and 600 lbs.

per sq. inch respectively, and the modular ratio $\frac{E_s}{E_c} = 15$ giving a value for K of 91.94. As M is directly proportional to this value K, the value of M for other conditions of stress can easily be found by combining Fig. 2 with Fig. 3.

Shearing Stresses.

Having calculated for bending moments, it will be necessary to test for shear. If this is found to exceed the allowable shear stress for plain concrete (usually taken as 60 lbs. per sq. inch) stirrups must be provided.

Experiments show that in reinforced concrete beams failing by shear, the failure is indicated by diagonal cracks at the bottom of the beam near the supports, suggesting diagonal tension in the concrete. It therefore follows that the stirrups should be placed to take this diagonal tension; that is, at an angle of about 45 deg. to the bottom of the beam and in the direction of the nearest support. The ends of the stirrups should be turned into the slab 3 to 6 inches.

Stirrups will be found very necessary for deep beams of short span; but even when calculations prove them to be unnecessary, their introduction adds considerably to the strength and rigidity of the beam, with very slight increase in cost.

Proportions of Rectangular Beams.

The upper part of a beam behaves more or less like a column; therefore to obviate side bending the breadth of the beam should be considered in relation to the span, and should not be less than $\frac{1}{12}$ of the span. Assume breadth (b) say $\frac{1}{24}$ to $\frac{1}{30}$

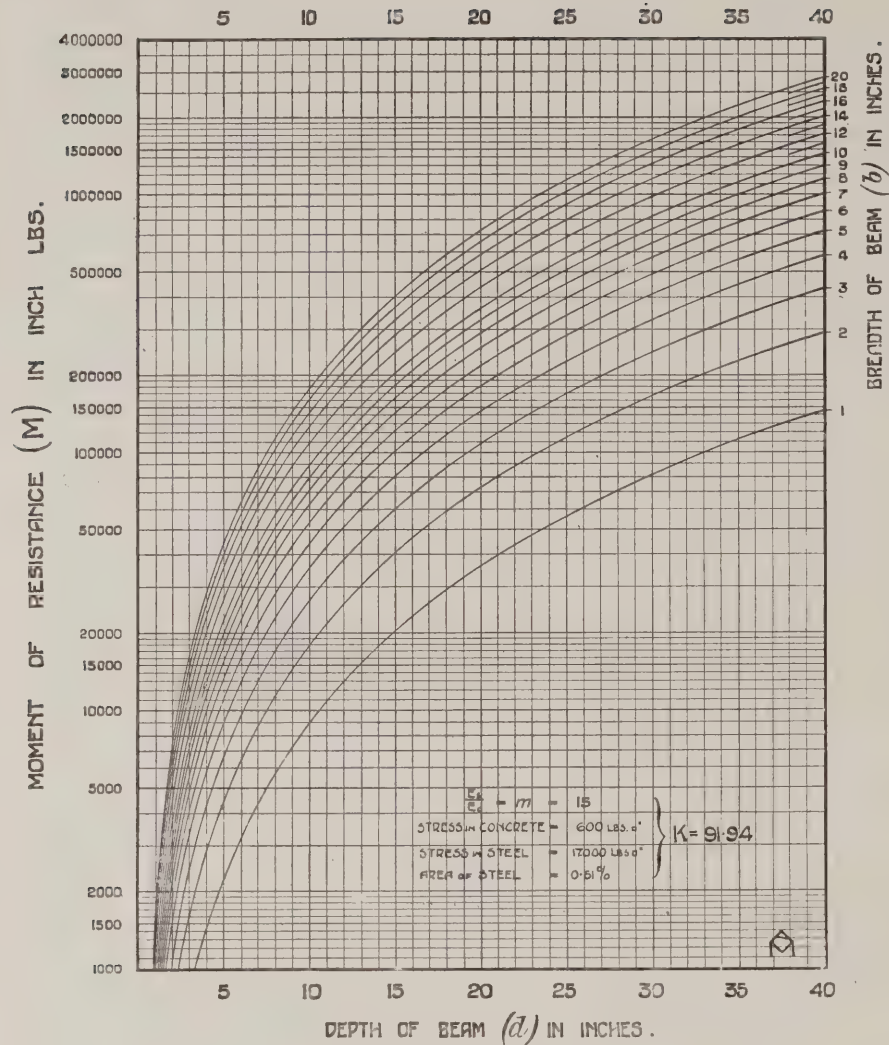


Fig. 3.

of the span and solve for "d" The best proportioned beams are where the depth is two to two and a half times the breadth.

The concrete surrounding the steel should not be less than 1½ in. clear from outside edge of the concrete; and where two or more bars are used, the minimum

distance between the bars should be twice the diameter of the bars; if the beam is too narrow to permit of this, the bars should be staggered, that is, placed zig-zag in section.

Example showing Use of Curve.
Calculate the area of steel reinforcement necessary for a beam of 17ft. span,

loaded with a uniformly distributed load of 8 tons. Working stress in steel 170,000 lbs. per sq. inch, and in concrete 600 lbs. per sq. inch, the condition at supports allowing of a maximum bending moment of $\frac{WL}{8}$.

$$BM = \frac{WL}{8} = M$$
$$\therefore M = \frac{8 \times 2240 \times 17 \times 12}{8}$$
$$= 457000 \text{ inch lbs.}$$

Now referring to Fig. 3 it will be seen that there are several beams which would satisfy the required "M," the most reasonable proportion being 10 in. x 22½ in. and 9 in. x 23½ in. Suppose we adopt the latter. As these curves (Fig. 3) are plotted for 0.61 per cent. of reinforcement, the area of steel required will be:—

$$\frac{23.5 \times 9 \times 0.61}{100} = 1.29 \text{ square inches.}$$

Adopt say three ¾ diam. rods each 44 sq. inches, giving 1.32 sq. inches.

Suppose in the latter example it is required to find the area of steel, but under the condition of t = 16,000 and c = 500 lbs. per sq. inch.

The more direct method will be to ascertain the value of K from Fig. 2, assume "b," and solve for d by:—

$$d = \sqrt{\frac{M}{Kb}}$$

Another method is as follows:—

$$\text{Value of K when } t = 17,000 \text{ and } c = 600 = 91.9$$

$$\text{Value of K when } t = 16,000 \text{ and } c = 500 = 71.3$$

Our new K (71.3) is less than the original K (91.9); we shall therefore require a larger beam, consequently we shall have to calculate as for a beam with a greater moment of resistance. Instead of equating $b d^2$ to $M = 457,000$ inch lbs., equate to

$$M = \frac{457000 \times 91.9}{71.3}$$

i.e.:—

$$b d^2 = \frac{457000 \times 91.9}{71.3}$$
$$= 588900 \text{ inch lbs.}$$

Upon reference to Fig. 3 this value of M with depth as before (23.5 in.) gives a breadth b of 12 inches. So that the size of the beam under the altered conditions of

TABLE I.

Stress f' in con- crete lb. per sq. in.	Stress in Steel lbs. per sq. inch.															
	t = 14000				t = 15,000				t = 16000				t = 17000			
	K	% steel	h	1-⅓h	K	% steel	h	1-⅓h	K	% steel	h	1-⅓h	X	% steel	h	1-⅓h
500	77.09	0.62	0.349	0.884	74.42	0.55	0.333	0.889	71.32	0.50	0.319	0.894	68.79	0.45	0.306	0.898
600	102.10	0.84	0.391	0.870	98.42	0.75	0.375	0.875	95.04	0.68	0.360	0.880	91.94	0.61	0.346	0.885
700	128.60	1.07	0.428	0.857	124.40	0.96	0.42	0.863	120.40	0.87	0.396	0.868	116.60	0.79	0.382	0.873
800	156.30	1.32	0.461	0.846	151.80	1.18	0.444	0.852	147.00	1.07	0.428	0.857	142.80	0.97	0.414	0.862

$K = \text{Moment Factor} = \frac{M}{b d^2}$

% Steel = Percentage of Steel (to concrete above centre of reinforcement).

$k = \frac{\text{Distance from top of beam to NA.}}{\text{Depth of beam d.}}$

$k d = \text{Distance from top of beam to NA.}$

$(1 - \frac{1}{3}k) = \frac{\text{Distance of resultant compressional force to centre of reinforcement.}}{\text{Depth of beam d.}}$

$(1 - \frac{1}{3}k) d = \text{Distance of resultant compressional force to centre of reinforcement.}$

$\frac{E_s}{E_c} = m = 15$

stress will be 12in.×23½in., but with 0.50 per cent. of steel instead of 0.61 per cent. The advantage of the latter method is that one can immediately choose a beam of reasonable proportions.

Table 1 shows different values of K etc. for varying values of t and c. Table 2 gives area and weight of round rods and square bars from ¼in. to 1in. diameter.

TABLE II.

Diameter inches.	Round bars.		Square rods.	
	Area sq. in.	Weight per ft. lb.	Area sq. in.	Weight per ft. lb.
1	.0491	.167	.0625	.212
1 1/8	.1104	.376	.1406	.478
1 1/4	.1963	.668	.2500	.850
1 1/2	.3068	1.043	.3906	1.328
1 3/4	.4418	1.502	.5625	1.913
2	.6013	2.044	.7656	2.603
2 1/2	.7854	2.670	1.0000	3.400

THE TESTING OF CONCRETE.

The following is the interim report of the Tests Standing Committee of the Concrete Institute, on the testing of concrete, reinforced concrete, and materials employed therein, as presented at the summer meeting of the Concrete Institute on June 7.

1. The Tests Standing Committee of the Concrete Institute held their first meeting on January 26, 1911, and have held five subsequent meetings.

2. The Committee decided to take up for immediate investigation standard methods of testing concrete, reinforced concrete, and materials employed therein.

3. This interim report deals only with the testing of the materials and specimen pieces of concrete.

4. For the purpose of this report the materials employed in concrete and reinforced concrete will be classified under the following headings:—(a) Coarse material; (b) sand; (c) cement; (d) water; (e) steel.

5. This report does not take into consideration, so far as applied to reinforced concrete, any coarse material which does not pass an aperture of ¾in. by ¾in., and which is not retained on an aperture of ¼in. by ¼in. The material used for coarse material generally can be classified under the following headings:—(a) Pit gravel; (b) do. crushed; (c) river gravel; (d) do. crushed; (e) sea gravel; (f) do. crushed; (g) crushed rock; (h) crushed brick; (i) crushed slag; (j) clinker and coke breeze.

Classes (i) and (j) are not recommended as suitable material for reinforced concrete.

6. This Committee is of opinion that to obtain the best results in concrete, the coarse material and sand should be properly graded.

Unfortunately the principle of grading coarse material and sand is very little resorted to, and consequently there are few data on this important subject.

This is now being considered in detail by the Committee, and a further report will be issued in due course.

7. The accompanying diagram [p. 658] giving the result of a series of tests shows that the percentage of voids in materials varies according to the different sizes and grading from 35 per cent. to 48 per cent. It should be noted that, owing to the different materials tested, the curve is very irregular.

8. This report does not take into consideration, so far as applied to reinforced concrete, any sand which does not pass an aperture of ½in. by ½in., and which is not retained on an aperture of ¼in. by ¼in.

Sand used in concrete work is as follows:—(a) Pit sand (other than that of glacial origin); (b) river sand; (c) sea sand; (d) grit or sand from crushed coarse material.

9. It is important that all sand that is not retained on an aperture of ¼in. by ¼in. should be rejected. The following results of tests have been submitted to this committee as showing the deleterious effect of allowing dust to remain in the sand:—

PROPORTION. THREE TO ONE (BY WEIGHT).	
Crushing Tests.	
British Standard Sand and Cement, Per Square Inch. 28 Days.	Crushings from Porphyritic Granite and Blue-grey Whinstone to pass 30 by 30 Sieve, including all dust. Per Square Inch: 28 Days.
2,789 lbs.	606 lbs.

Tensile Tests.			
7, Days.	28 Days.	7 Days.	28 Days.
182.2 lbs.	234.6 lbs.	53.2 lbs.	104 lbs.

Average of Five Tests at each Period.*

10. The percentage of voids in sand (which varies from 23 per cent. to 40 per cent.) is shown in the accompanying diagram [page 658].

11. As will be seen from the accompanying diagram, according to the various proportions of graded coarse material and sand, the percentage of voids varies from 24 per cent. to 30 per cent.

12. All cement should be tested and analysed in accordance with the Engineering Standard Committee's latest specification. The Tests Standing Committee of the Concrete Institute strongly recommends that in addition the crushing strength of the cement should be ascertained in the following manner:—

13. Cubes mixed in the proportion of 3 parts of standard sand to 1 part of cement, by weight, shall be made up and treated in all respects similar to briquettes of sand and cement for the tensile test, but the test specimens for crushing to be 3in. cubes. The crushing strength shall be not less than ten times the tensile strength at 28 days required by the British Standard Specification.

14. This Committee is of opinion that it is not advisable to define the proportion of water to be used in making up concrete or test specimens of cement and concrete, as this quantity must be more or less dependent on the variations in the weather and the nature of the coarse material and sand used in each particular case; but it is generally considered that the concrete should be mixed to a plastic state, though not so wet as to allow any dripping of the cement, water, and sand.

15. The following tests are recommended for all steel work for use in reinforced concrete.

16. The steel shall attain an ultimate tensile strength of not less than 60,000lbs. per sq. in.

17. The steel shall withstand a stress of at least 34,000lbs. per sq. in. before showing any appreciable permanent set.

18. The contraction of area at fracture shall be not less than 45 per cent.

18a. (Or) The elongation in the case of bars of 1in. diameter and under shall be not less than 25 per cent. measured on a length equal to eight times the diameter of the bar tested.

The elongation shall be measured in the case of bars over 1in. diameter on a length equal to four diameters of the bar, and shall be not less than 30 per cent.

19. All steel shall stand bending cold to an angle of 180 degrees around a diameter equal to that of the piece tested, without fracturing the skin of the bent portion.

20. The steel shall be free from scabs and flaws.

21. For the purpose of ascertaining the crushing resistance of concrete the following particulars shall be complied with:—

(a) All test pieces shall be 4in. or 6in. cube.

(b) Number of test specimens for each test shall be six.

(c) Three cubes shall be made in the laboratory and three for each test shall be made on the works.

(d) The cement for each series of cubes shall be taken from the same consignment.

(e) All laboratory-made test cubes shall be made as far as possible on practical lines, so that the results of the tests shall be such as can be reasonably expected from concrete in the actual work with proper care and attention.

(f) Specimen cubes from the works shall be made with concrete taken from the actual mixing platform; the concrete used for the specimen cubes shall be taken from the various batches of concrete prepared for use in the works.

(g) In all cases specimen pieces shall be made in metal moulds, and the concrete worked in by "punning" and "tamping" and afterwards gently rammed.

22. The following particulars shall be taken or ascertained of the materials used in the test specimens of the concrete:—

(a) Full test on cement as specified in Clauses 12 and 13.

(b) The coarse material and sand for the laboratory tests, which is to be taken from bulk as delivered to the works, shall be sieved to the following degrees and the voids ascertained of (1) the whole and (2) of each separate grading:—

Coarse Material.	
To pass an aperture of—	To be retained on aperture of—
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.

Sand.	
To pass an aperture of—	To be retained on aperture of—
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.
¾ in. by ¾ in.	¾ in. by ¾ in.

(c) The proportion of each grading to the whole.

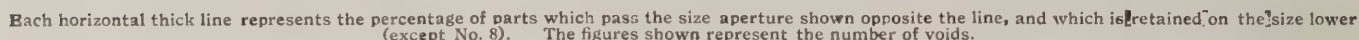
(d) The specific gravity of the coarse material and sand.

(e) The exact dimensions of specimen cubes.

(f) The weight per cubic foot of all specimens immediately before testing.

(g) The testing of concrete specimens shall be conducted on three laboratory specimens, and three specimens made on

*Tests made for Messrs. Scott & Fraser by Messrs. D. Kirkaldy & Son.



Secretary of Tests
Standing Committee.

Schemes were invited from five firms of specialists, accompanied by tenders from contractors nominated by the specialists. The complete work was divided into two separate contracts, the first contract embracing reinforced concrete, excavating, drains, terra-cotta, and asphalt, i.e., the whole of the work required for a complete "carcase"; and the second contract embracing joinery, plastering, and all

other "finishings" required. This division causes difficulties which would be avoided by the employment of a single contractor, though the difficulties are not insuperable.

Each firm of specialists was supplied with a set of one-eighth scale working drawings, the eight sections having been altered to show reinforced-concrete construction, and the eleven plans still showing brick walls.

After discussion with the firms concerned, it was decided to accept the tender of Messrs. J. Bentley and Co., of Bradford, for the scheme submitted by the Trussed Concrete Steel Company, Ltd., on the Kahn system. An important concession was made during the negotiations, viz., that in developing the working drawings every member should be calculated to the R.I.B.A. standard, the drawings and calculations being referred to Mr. C. F. Marsh, M.Inst.C.E., for him to decide if this was the case. This was of great value to us in getting the approval of the Corporation, and we are much indebted to Mr. Marsh for very greatly easing our minds in regard to the details generally of the design.

Tests of Cement and Concrete.

In defining the concrete to be used, instead of specifying materials and proportions, it formed part of the contract that the concrete at twenty-eight days old should have a crushing strength of 154 tons per sq. ft., this being the standard given in the R.I.B.A. report. This seems much the safest method to adopt, unless the materials are very well known beforehand.

Retaining Walls.

The whole of the foundations were on fairly hard red sandstone, on which a pressure of 7 tons per sq. ft. was allowed. The retaining walls were designed as beams subjected to a horizontal load, and supported at each end by a stanchion, instead of either depending on a sole piece for stability or acting as a vertical beam against the floor.

The Corporation would not allow the excavation of the whole site at once, on the ground of risk of settlement in adjoining streets, and the work had to be done a bay at a time. The soil was a stiff clay, and we were able to form nearly all the retaining wall by removing a portion of the timbering at a time and casting the concrete solid against the clay, thus removing all possibility of settlement. It had been intended to trust to the concrete wall for resisting damp, but the Corporation insisted on a cavity wall, which was then formed by means of a 3 in. brick-on-edge wall in cement inside the retaining wall. They also insisted on connecting the cavities by $\frac{3}{4}$ in. of rock asphalt over the backs of the piers where the retaining wall rested against them, and owing to the cramped space available, this was done by casting the asphalt on a floor in large sheets and lowering them into position.

Although the retaining walls were only from 6 to 14 in. thick, according to span and depth, no leakage of moisture through them before the brick inner skins were built could be detected, except for a slight flaw in the joint with floor slab, and apparently they would have been quite satisfactory without a cavity.

Terra-cotta Facing and Internal Tiling.

The building is cased externally with Burmantofts "Marmo" ware of a chocolate colour for the ground storey, and Burmantofts "Vitreous Buff" terra-cotta

for the upper storeys. It had been intended to have a more interesting colour scheme of "Marmo" ware throughout, with a green base and cream upper part, but, much to our regret, the committee reversed their decision.

The terra-cotta is only $4\frac{1}{2}$ in. on bed, and has no structural function except to provide an impervious facing from which the Manchester soot can readily be removed. The back of each block was hollowed out with dovetail-shaped hollows, and the blocks were built up in cement to a height of 2 ft. or so, forming a $4\frac{1}{2}$ -in. wall or skin outside the steel reinforcement. Inside the reinforcement was a face of wooden centering, and the concrete was deposited between this temporary inner centering of wood and the permanent outer centering of terra-cotta, the dove-tailed hollows of which it completely filled, making a perfect bond between concrete and terra-cotta. Projecting cornice blocks were secured by stout wire or thin rods. Hardly any propping was used to resist the pressure of concrete, but in cases of important beams extra shear members were introduced as a safeguard against the number of joints caused by casting only about 2 ft. of height at a time. Had the strength of the external wall construction been cut at all fine, it would have been necessary to use more propping or clamping to hold the terra-cotta up while a greater height of concrete was cast at one operation. The method appears to be entirely successful, and there is not a suspicion of a crack in any part of the facing. The walls in some of the principal rooms, and the staircases, are faced with Chance's vitreous tiles. The walls in the lavatories and kitchen, and round the swimming bath, are covered with marble terrazzo mosaic. The floors generally are finished with Ebnerite patent jointless flooring.

Labour Items.

In the construction of centering there seems scope for a new class of labour, as it hardly seems to demand a fully skilled carpenter, except in elaborate portions, while a labourer is not good enough. Our contractors used selected labourers, or "timber men," paying them a little higher to get good men. It would perhaps be better to specify that carpenters should be employed for the bulk of the work, with a due proportion of labourers, as more accurate work would be obtained, and friction with the trade unions avoided. Another kind of friction should be avoided by very clear definition as to how much work will be required on the steel rods, etc., after the contractor receives them. If he expects to receive them just ready to put into position, and then has to do a lot of bending or cutting, much wrangling will result.

Girders Over Hall.

The large girders, 50-ft. span and 12 ft. deep, carrying the two floors over the large hall, are very rigidly braced in position by being monolithic with the floors at top and bottom, the T head of the girder being a part of the upper, or gymnasium, floor. The only difficulty in designing them lay in the opening, 7 ft. 6 in. high by 6 ft. wide, required through the middle for a corridor, which reduced the resistance to any shearing stresses set up by unequal loading. This was overcome by a triangular frame of reinforcement round the opening. The girders, with their T heads, weigh about 47 tons each, which includes $2\frac{1}{4}$ tons of steel reinforcement, and are calculated to carry safely

a load of 230 tons each, including weight of structure. The steel truss originally designed for this position would have weighed about 13 tons net, not including any concrete protective covering.

Swimming Bath.

Perhaps the most interesting part of the building is the fifth-floor swimming bath, in which over 180 tons of water have a surface 57 ft. above the street; though the interest may be due rather to comparative novelty than to any actual difficulty of construction. It is simply a rectangular box, 60 ft. by 21 ft., with a water depth of from 3 ft. 6 in. to 6 ft. 6 in., and rests on transverse beams varying in depth from 3 ft. to 6 ft. 6 in. and 26 ft. span; the thickness of bottom being $7\frac{1}{2}$ in. and the sides being from 5 in. to $6\frac{1}{4}$ in. thick. The architects carefully considered whether to line it with asphalt or similar lining, and decided to trust to the concrete alone, simply lined with glazed tiles set in cement. The concrete was specially graded with 1 volume of cement, 1 1-3 of sand, and 2 2-3 of stone riddled through a $\frac{1}{2}$ in. mesh. The whole of the bottom slab was cast in one day. Five days afterwards the edges were grouted with neat cement, and the whole enclosing wall, up to water level, was cast in a single day. As a precaution against leakage, a light tray, 3 in. to 4 in. thick, was constructed level with the soffit of the supporting beams, and this tray was asphalted.

Cost per Cubic Foot.

The author could not state the cost as finally adjusted, but believed this would be very close to the original amount stipulated, viz., £35,000. The cost per cubic foot, measured from under side of concrete foundations to top of roof, works out about as follows:—

	Per ft. cube.
Complete reinforced-concrete structure, including walls and floors and filling to terra-cotta; excluding excavating	3.0d.
Terra-cotta facing, including fixing	1.1d.
All other trades together	5.1d.

Total approximate cost 9.2d.

Various circumstances combined to make this a very cheap building, and it would probably cost more to duplicate it.

THE PROPOSED NEW QUEBEC BRIDGE.

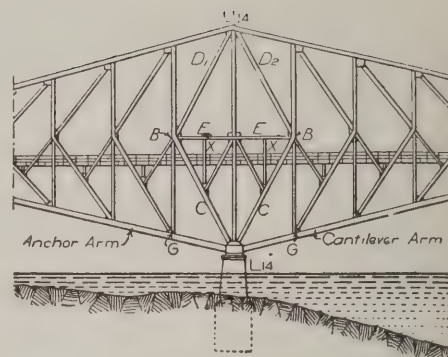
With reference to the interesting controversy which has arisen between Sir Wilfrid Laurier and Mr. F. Dudley Docker, the latter of whom considers that the contract should have been given to his firm, the following account of the work that is proposed to be done will be read with increased interest. Sir Wilfrid Laurier's criticism of Mr. Docker's speech appeared in the "Times" of June 5th, and Mr. Docker's reply in the issue of June 9th.

The design on which the 8,650,000-dollar contract has recently been awarded to the St. Lawrence Bridge Company of Montreal for the fabrication and erection of the superstructure of the Quebec Bridge is for a very much heavier, stronger, and more costly structure than the original bridge, and differs notably from it, from the official design of the Board of Engineers, and from the other designs submitted. It restores the length of the main span to 1,800 ft., increases the length of the suspended centre span to 640 ft., involves the

construction of an entirely new substructure, and the dead weight is considerably reduced by the use of nickel steel for all principal members between the main piers, while greater mass and counter-weight in the anchor arm has been secured by the use of carbon steel there. Eyebars have been eliminated in favour of riveted tension members in the cantilever arm, but some of these have been provided with pin connections to facilitate erection. Many details of connections that were carefully developed in the official design have been retained or modified in the contract design, but the arrangement of the web members in the cantilever and anchor trusses is entirely different from that design or from that in any American bridge, and is considered statically determinate with a minimum of secondary stresses and

with no redundant members in the cantilever arms. The conspicuous omission of the members usually provided to connect the top chords of the centre spans and cantilever arms emphasises the structural independence of the stresses. Modifications have been made in the original specifications, and the present design has been carefully revised by the commission.

The top chords and the main tension diagonals are all made of four heavy plate webs connected by very light bracing. They have a maximum depth of 78 in. for pieces 86 ft. long, thus developing great stiffness to resist flexure from their dead weight. The bottom chords have four webs 78 to 48 in. deep, with full length longitudinal plate diaphragms. Both top and bottom chords are made in full panel sections of a maximum length



PANELS AT MAIN PIER.

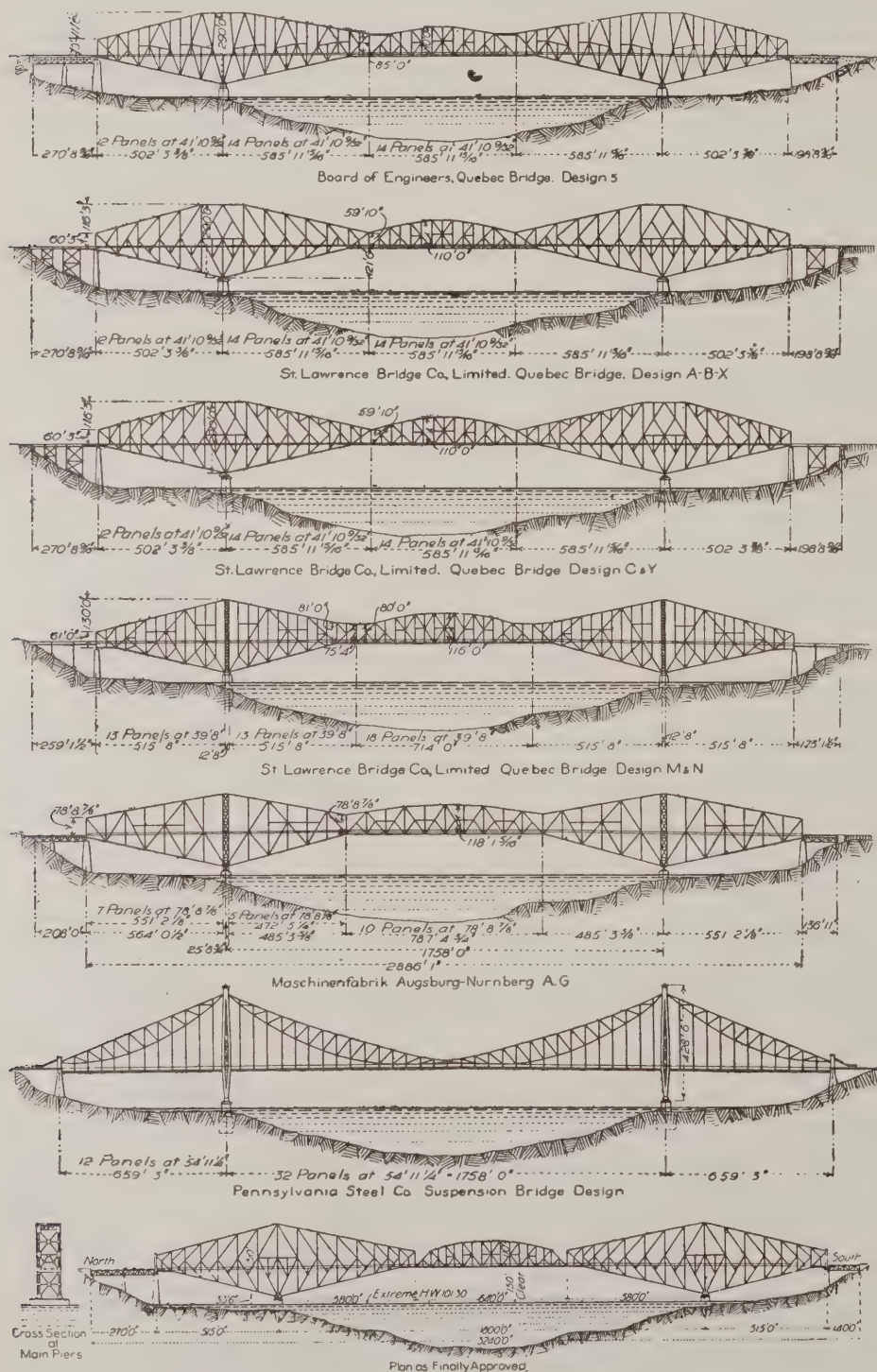
of 86 ft., and will be fully spliced with joints made and completely riveted as the erection progresses. The web members are pin-connected to gusset plates projecting beyond the top and bottom chords, so that neither of the latter have pin holes through them. The bottom chords have half-hole pin bearings on the main pedestals at the river piers, and the principal compression members in the truss webs have similar bearings at both ends. None of the compression members have forked ends, the maximum members will have a shop length of about 43 ft., and a weight of about 300,000 lb., but it is believed that they can be fabricated and handled without special difficulty.

In each panel the shear, being divided between two principal web members, is reduced to a moderate amount except in the main diagonals meeting on the river piers, and the chord connections providing for a moderate increment of stress at each panel point do not present special difficulties.

In the cantilever and anchor arm trusses all members carry both dead and live loads excepting the four secondary ones marked X in the pier panels. All shear transmitted to points BB is taken directly down the inclined posts CC to the pier bearings, and the horizontal thrust at the points BB is taken by the tension subcord EE. Because of the shorter length of the anchor arm, the shear there will always be greater than on the cantilever arm, and the function of the diagonals DD is that of compensating braces carrying part of the shear from the anchor arm to the cantilever arm side, D1 being always in tension and D2 always in compression. The useful result of this construction is that the local distortion immediately at the pier is only that due to the compression of the comparatively short members CC, added to the depression, due to other sources of the panel point GG.

Comparison of the displacement diagram for this design, for the official design, and for the designs previously used in cantilever bridges shows far less secondary stresses in the members connected to the main shoe in this design than in any other design examined, all of the secondary stresses in it being so small as to be considered practically negligible.

The contractors consider the greatest advantage in their design to be the ease and safety with which it is believed that the structure can be erected. Most of the members can be independently erected in due sequence. An overhang of only 42 ft., or one sub-panel, is required for the traveller instead of two or three times as much, which would be necessary for the erection of most of the other designs. This enables the length of the traveller to be sufficiently reduced to enable it to clear the sway-bracing at the first panel point from the end, thus permitting that bracing



SOME OF THE DESIGNS FOR THE NEW QUEBEC BRIDGE.

to be always connected up close to the traveller, and maintaining the stability of the trusses as fast as they are extended. It is intended to complete the erection of the anchor arms before commencing that of the cantilevers.

The most difficult and critical part of the work will be the placing of the 5,000-ton, 640-ft. suspended centre span which it is proposed to erect by ordinary methods at the proper height on shore falsework, which will be floated with it to position between the finished cantilever arms and connected with them. As there is here an average tide of 16 or 17 ft. and a corresponding current of six or seven miles per hour, the difficulties are great, and the feat will be one demanding the utmost skill and ability. No precedent of equal magnitude exists, but the contractors have for many years successfully employed this method of erection for numerous smaller spans, as illustrated in the erection of the Miramichi, the Fraser River, the Coteau, and other important bridges built by the Dominion Bridge Company.

It is proposed to erect the cantilever and anchor arms by a 600-ton steel traveller running on a special track carried on the regular floor-beams. The traveller will have a clearance of about 10 ft. on each side with the trusses, and will run on two standard-gauge tracks about 54 ft. apart on centres, each carried by two lines of stringers 6½ ft. deep, borrowed from the permanent structure. The traveller will have a 36 by 54 ft. tower 160 ft. high, with a base extended in the rear to a total length of about 85 ft. It will be of riveted construction, with four vertical main columns. There will be a clearance 20 ft. high through the bottom extension for the delivery of materials to the overhang on a centre service track, each side of which there will be cantilever platforms for the hoisting engine. The top chords of the overhang, about 150 ft. long over all and 54 ft. apart on centres, will form runway girders for two double cantilever travelling cranes, each of them having overhangs of 25 ft., which command both trusses with two trolley hoists of 60 tons capacity. This will enable all principal truss members to be erected simultaneously in pairs.

The St. Lawrence Bridge Company of Montreal is a Canadian firm, being a combination of two Canadian bridge companies, the Dominion Bridge Company of Montreal and the Canadian Bridge Company of Walkerville, Ontario. The contract price of 8,650,000 dollars and the price for the substructure make a total of about 12,000,000 dollars. It is expected the bridge will be finished by 1915.

The design is to have the K web system in the cantilever and anchor arms, the suspended span being a modified Pratt. All members in the anchor arm and those immediately over the main pier, as well as the floor system, are carbon steel, the cantilever arms and suspended span being of nickel steel. The top chords are composed of built-up riveted members extending over one full truss panel or two floor panels.

The particulars may be thus conveniently summarised:—

The suspended span is 640 ft. long, 110 ft. deep at the centre, and 70 ft. at each end. The cantilever arms are 580 ft. long, 70 ft. deep at the end, and 310 ft. high over the main post. The anchor arms are 515 ft. long, as at present designed. The trusses are 88 ft. apart, and there is a clear headroom of 150 ft. above extreme high water. The total length is about 3,228 ft.

The bridge will be designed to accommodate two railway tracks and two side-walks for foot passengers, the Government having decided that no accommodation will be provided for highway traffic. The train load allowed for on each track will be equivalent to two E60 engines followed by a train load of 5,000 lbs. per lineal foot of track.

The length of span has been slightly increased over that originally proposed by the Board, being now fixed at 1,800 ft., which is the same as the original span. This increase was brought about by a rearrangement in the manner of sinking the caissons, thus allowing the centre line of the new bridge to remain coincident with that of the old bridge. The old main piers will not be used; but will be taken down to lower water level, the stone being reused in the new piers.

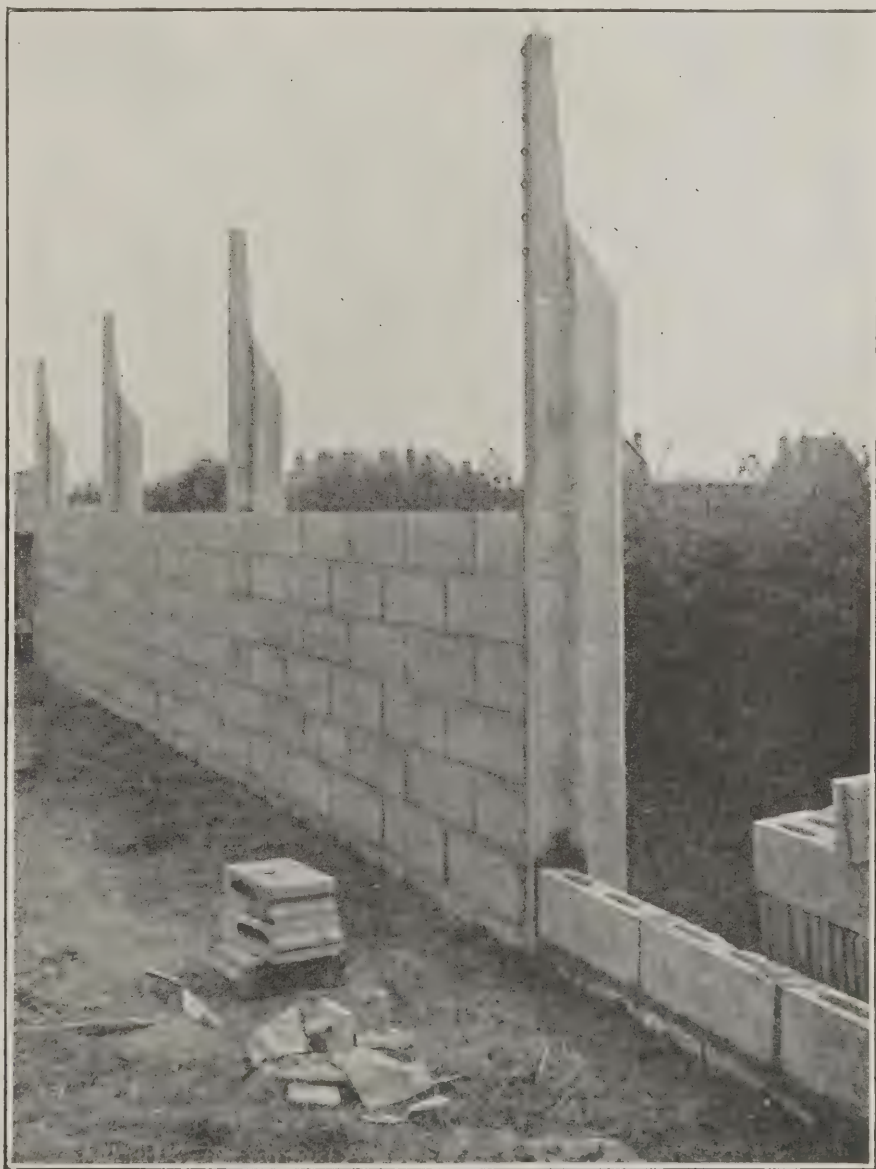
£2,000 for Removal of Lamps on Coronation Route.

To make room for the Coronation procession, street lamps are being removed in London. The lamps are being stored away in a vacant plot in Kingsway, where they will remain until after the Coronation, when they will be replaced. The average cost for removing each lamp is about £20. It is estimated the total cost of this work will be £1,000 or £2,000.

A REINFORCED CONCRETE BOUNDARY WALL.

Brick and stone boundary walls are costly to build and maintain. They must be, in the case of brickwork, at least 9 in. thick, and much thicker than that when the height exceeds 7 ft.

A wall that has been erected at the Borstal Institution, Feltham, to the design of Major H. S. Rogers, R.E., Surveyor of Prisons, is 7,500 ft. long, and 7 ft. 7½ in. high to the top of the coping; yet it is only 4½ in. thick, because it is constructed of reinforced concrete. At intervals of 13 ft. 8½ in.; however, there are piers, 12 in. by 9 in. in plan, by 12 ft. 10½ in. long over all, and twice rebated to receive the 4½ in. hollow concrete blocks of which the wall is constructed. The piers are set 2 ft. 6 in. in the ground, on a bed of concrete 1 ft. 9 in. by 1 ft. 9 in. by 1 ft., and the upper portion is diminished to carry five lines of barbed wire. In the sides of the rebates is embedded steel wire mesh, spaced so as to fit into the bed joints of the 4½ in. hollow concrete blocks. Steel-wire netting is also used for the reinforcement of the bed joints. The hollow concrete blocks for the wall are 28½ in. by 9 in. by 4½ in., with recessed end joints. The blocks, each of which has two hollows, were made two at a time in a Winget concrete block-making machine. Four hundred of these block-



CONCRETE BLOCK BOUNDARY WALL AT FELTHAM. IN COURSE OF ERECTION.

were made and stacked per working day of ten hours by six men; and the one bricklayer and two labourers employed in erecting the wall were able to build in one day 16 ft. by 8 ft. of wall, one pier, and 2 ft. foundation blocks.

From the accompanying view of the wall the panel-and-post construction of the wall will be clearly seen, as well as the arrangement for accommodating the barbed wire with which the wall is topped; the height of the wall to the top of the barbed wire being 9 ft. 9 in. The wall, of which the design is quite novel, has turned out very satisfactorily. The machine with which the blocks were made was supplied by the (U.K.) Winget Concrete Machine Co., Ltd., Newcastle-on-Tyne.

STANDARDISING DRAWINGS FOR REINFORCED CONCRETE WORK.

The Report of the Reinforced Concrete Practice Committee, embodying suggestions on "The Standardisation of Drawings of Reinforced Concrete Work," was presented at the meeting of the Concrete Institute on June 8th. The Committee remark that as reinforced concrete is most extensively used in building, drawings should conform most closely to general architectural practice. The standards which will be found advisable for the preparation of drawings for reinforced concrete in architectural work will serve quite well for engineering work, and therefore more regard has been paid to the building than to the engineering side in the remarks which follow.

With regard to scale, it is recommended that the following are the best scales for standardisation for the preparation of drawings for reinforced concrete work:—

For general drawings, showing schemes in outline without detailing the reinforcements: $\frac{1}{4}$ in. scale (1-16 in. scale to be substituted for $\frac{1}{4}$ in. scale for large jobs).

For detail drawings, for framing plans and slab reinforcements: $\frac{1}{8}$ in. scale for elevation of beams, etc., and general detail drawings: $\frac{1}{4}$ in. scale ($\frac{1}{8}$ in. scale to be substituted for $\frac{1}{4}$ in. scale for large members); for sections of beams, etc.: $1\frac{1}{2}$ in. scale; for large details of intricate work: 3 in. scale.

Thus we have, generally speaking, three scales— $\frac{1}{4}$ in., $\frac{1}{8}$ in., and $1\frac{1}{2}$ in. These three scales, it is suggested, are sufficiently elastic for ordinary work, and for very large jobs smaller scales can be substituted as suggested above.

All dimensions should be figured on the plans and nothing left to be scaled.

It is suggested that the size of sheets upon which drawings are made should be standardised. For general purposes two sizes are advocated, namely, 40 in. by 27 in. and 20 in. by 27 in. Larger sheets would be of the same depth, 27 in., but of greater length. These are measurements within the margin line, which latter should be ruled upon the tracing cloth, and photographic prints should be trimmed to this ruled margin line. These sizes have been chosen for the reason that tracing cloth usually measures 20 in. to 30 in. wide, while photo-printing paper when trimmed is about 28 in. wide. The suggested standard sheets are therefore proportionate to the tracing cloth and to photo-printing paper. If a special marginal line is required on a photographic print it should be drawn inside the ordinary marginal line referred to above, which line constitutes the full size of the sheet when trimmed.

Indicating the Reinforcements.

As regards the indication of reinforcements upon the plans, it is suggested that

it will be found convenient generally on $\frac{1}{4}$ in. scale drawings to show main bars by means of thick solid lines, secondary bars by means of lines of medium thickness, and the outlines of the concrete and other work by means of thin lines. Working with this small scale, it may often be found an advantage to omit the reinforcements in adjoining members, as, for instance, the bars in floor slabs when drawing elevations of T-beams, as otherwise the main reinforcements may be obscured.

In $1\frac{1}{2}$ in. and 3 in. scale drawings it will often be found advisable to show bars, when not of very small size, by means of double lines. The lines should, however, be strongly drawn.

Sections will often require picking out. Etching is often employed, but if adopted it should be very open, for it should be recollected that if the drawings are reproduced and reduced in size by photographic means, which may very possibly take place and should be provided for, the closely placed lines will run together. Many draughtsmen prefer, however, to indicate the concrete by marks intended to show stones, as it is claimed that etching takes longer to do and requires great care to ensure the lines being spaced regularly apart, without which the appearance is not good. There seems justice in this contention, and such marking for showing concrete is advised.

Reinforcements shown in section should always be blacked in. It is better to do this even on the largest drawings, because the drawings are made much clearer thereby, and too much emphasis cannot be given to the reinforcements, as the drawings are specially intended to indicate them.

Shading of bars should not be employed on anything less than half full-size drawings.

Stops to Ends of Lines.

In showing reinforcements on plans and elevations to $\frac{1}{4}$ in. scale it is necessary to employ some form of stop to the ends of each line to show where the ends of a bar terminate. As the ends of bars are manipulated in various ways, it is advisable to employ some form of shorthand to indicate the various kinds of ends, and the Committee show methods of representing ordinary cut, fishtail, turned-over, and hooked ends, cranking, and wired junctions.

It is suggested that some standard list of abbreviations would not only save much time in draughtsmanship, but would be clearer in every way to every one consulting the drawings, and such a list is put forward. Suggestions as to lettering and colouring are also detailed in the report, which will no doubt be published by the Institute.

Patents and Trade Marks.

The taking-out of a patent is less beset with difficulties now than it used to be, but there is still abundance of opportunity for going wrong. The assistance of a skilled patent agent is therefore highly desirable, in which connection the name of Mr. Benjn. T. King, A.I.M.E., 165, Queen Victoria Street, may be mentioned.

Carlisle Plaster and Cement Co.

An extraordinary general meeting of Messrs. Joseph Robinson and Co., Carlisle, was held on June 11th, when it was decided to approve an amalgamation between that company, John Howe and Co., and the Long Meg Plaster Co., the new company to be called the Carlisle Plaster and Cement Co., and to take over the various concerns as from January 1st last.

THE CONCRETE INSTITUTE.

Summer Meeting.

The two days' summer meeting of the Concrete Institute was held on Wednesday and Thursday, June 7th and 8th. On the morning of June 7th, a meeting took place in the lecture hall of the Institute at Denison House, 296, Vauxhall Bridge Road, Westminster, Sir Henry Tanner, I.S.O., in the chair, when a paper was read by Professor Beresford Pite, F.R.I.B.A., on the "Æsthetic Treatment of Concrete, of which an abstract appears in another part of the present issue. A discussion followed in which Mr. Heathcote Statham, F.R.I.B.A., Mr. A. Alban H. Scott, M.S.A., Mr. Edwin O. Sachs, F.R.S.Ed., Mr. J. Ernest Franck, A.R.I.B.A., Mr. C. H. Colson, M.Inst.C.E., Mr. A. F. Corbett, F.R.I.B.A., Mr. Percival M. Fraser, and the President took part. An interim report of the Tests Standing Committee on "The Testing of Concrete, Reinforced Concrete and Materials employed therein" was then presented, and discussion thereon deferred until next session. The report appears on p. 657.

In the afternoon a visit was paid, by the kind permission of the architects, Messrs. Lanchester and Rickards, F.R.I.B.A., to the Wesleyan Memorial Hall, Iothill Street, Westminster, now in course of construction, and in large part of reinforced concrete.

In the evening the first annual dinner of the Concrete Institute was held at the Trocadero Restaurant, Shaftesbury Avenue, Piccadilly Circus, W., the members being received by the president, Sir Henry Tanner.

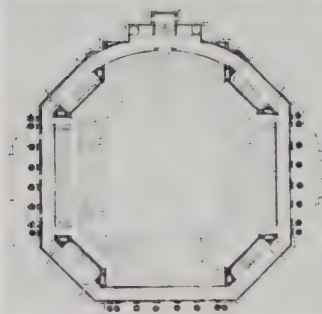
After the patriotic toast from the chair, Mr. Alexander Siemens, Pres. Inst. C.E., proposed the toast of the Concrete Institute, which was replied to by Sir Henry Tanner, I.S.O. The toast of the visitors, proposed by Mr. Edwin O. Sachs, was replied to by Mr. H. Percy Boulnois, M.Inst.C.E., Chairman of the Council of the Royal Sanitary Institute. The toast of the chairman, proposed by Mr. F. A. White, was given with musical honours, and was briefly acknowledged by Sir Henry Tanner.

On the morning of Thursday, June 8th, a meeting took place in the Lecture Hall of the Institute at Denison House, Westminster Mr. E. P. Wells J.P., in the chair, when a paper was read by Mr. Alfred E. Corbett, F.R.I.B.A., on the "Y.M.C.A. Building at Manchester." An abstract on p. 658. A discussion followed, in which the following took part:—Mr. W. C. Perkins, Mr. G. C. Workman, Mr. H. E. Yeatman, Mr. S. Bylander, and Mr. E. P. Wells.

The report of the Reinforced Concrete Practice Standing Committee on the "Standardisation of Drawings of Reinforced Concrete Work" was then presented. An abstract appears above. The discussion thereon was deferred until next session.

In the afternoon a visit was paid, by kind permission of Mr. Frederick Palmer, C.I.E., M.Inst.C.E., Engineer to the Port of London Commissioners, to inspect a wharf and warehouse now being constructed of reinforced concrete piles, floors, and walls in London Dock.

In the evening a conversation was held in the Galleries of the Royal Institute of British Architects, No. 9, Conduit Street, Regent Street, when members were received by the President, Sir Henry Tanner.

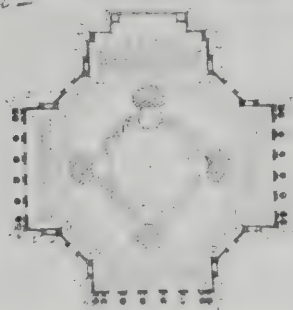


Design
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*William Haywood Architect & Co. -
Birmingham 1910 -*

for
MEMORIAL



THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 28th, 1911.

Volume XXXIII.

No. 857.



BAY WINDOW IN DRAWING-ROOM. "GREAT ROKE," WITLEY, SURREY.
BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.



PROFESSOR WILHELM DÖRPFELD, Ph.D., D.C.L., F.S.A
ROYAL GOLD MEDALLIST, R.I.B.A., 1911.

THE ARCHITECTS' & BUILDERS' JOURNAL.

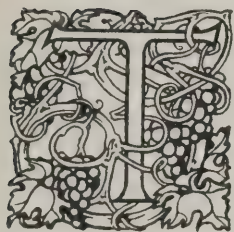
JUNE 28th, 1911.

CAXTON HOUSE, WESTMINSTER.

VOLUME 33. No. 857.

NOTE : The List of Contents will be found on page V. of the front advertisements.

The Town-Planning Conference Book.



THE bulky volume of the Transactions of last year's Town-planning Conference,* recently issued by the Institute of Architects, forms a kind of collection of statements and illustrations of the various points of view from which town planning may be regarded and practised. Almost every theoretical prin-

ciple in connection with the subject is represented here, in combination with many plans and other illustrations which are useful either as suggestions or as records of fact. The Royal Institute, we are told, considers that it is performing a public duty in placing before the local authorities who will have to prepare schemes under the Act the best information, both historical and actual, which is available on this subject; and the volume which they have issued may claim to fulfil this intention. We presume that it is purchasable at a price by the general public; the copy before us (one of those issued to subscribers) contains no information on this point.

As Mr. J. W. Simpson observes in his short perface, town planning has different meanings with different people. "To the medical officer of health it means sanitation and healthy houses; to the engineer, trams and bridges and straight roads, with houses drilled to toe a line like soldiers. To some it means open spaces; to the policeman, regulation of traffic; to others, a garden plot to every house, and so on. To the architect it means all these things, collected, considered, and welded into a beautiful whole." Nothing could be better expressed; that is the real province of the architect in town planning; unfortunately, how little appreciated in this country! Official authorities in England appear to be entirely blind on one side in regard to the subject of improvements; such improvements mean to them, in general, nothing but short routes and management of traffic; and when, as in the case of St. Paul's Bridge, the architects stepped in to point out that there was architectural effect to be considered also, the official reply was that they could not consider the alignment of streets solely with an eye to architectural effect. Who ever asked them to do so? The fact was, of course, that it was they who were considering the matter solely in regard to one object—traffic management—which, after all, is not the highest object. In a capital city the question of architectural alignment, affecting as it does the beauty of the city for generations to come, ought to take precedence of police regulation of traffic, which can be accommodated to special circumstances if people will only think so. The traffic difficulties in connection with an axial line of street are often greatly exaggerated by authorities who merely want to have their own way, and who can see only one side of a subject. It is absurd that a city should be spoiled, architecturally, to suit some arbitrary police regulations.

The contents of the Conference Transactions commence, logically, with papers dealing with the past history of town planning, and Professor Gardner's paper on "The Planning

of Hellenistic Cities" shows that the main question of principle to-day, between the irregular or the axial laying-out of cities, is as old as the period to which reliable history extends. The planning of cities went through the same two phases in the ancient world which it has gone through in the modern world. There was the era of narrow winding lanes rather than streets, only interrupted by the open spaces necessary for the temples of the gods, and the succeeding period of towns laid out with streets at right angles to each other. Earlier than the Greek cities it seems probable that stateliness of effect was the primary object in the laying-out of such cities as Babylon, described by Herodotus as four-square, with the Euphrates running through the midst, and the streets parallel and at right angles to each other. Very probably this developed out of a period when towns were not planned at all, but grew up anyhow; but always, with advancing civilisation and culture, there is the same result—the perception that something grand can be got out of a city if it is designed as a whole and on axial lines instead of being left to expand or to be crowded up (for cities within walls could not expand) by spontaneous generation. The prevalence of this ideal is illustrated in the description of the Heavenly City in the Book of Revelation, which was "four-square, and the length is as large as the breadth"; and it had "on the east three gates, on the north three gates," etc.—three gates on each of the four sides; the ideal of a city which had filtered down in the Eastern mind from the days of Babylon, and Nineveh, and Khorsabad, which latter represents the same ideal on a smaller scale. The mediæval city relapsed, except in such occasional examples as Carlsruhe, into the system of irregular alleys, and Paris, till within a comparatively modern period, was a city of dirty, narrow winding streets. Then there followed, as in ancient Greece, the reforming of the city plan with wide streets and axially disposed buildings, so that it is now one of the stateliest of cities. In London we have not arrived at that point yet. The City, which of course represents mediæval street lines, cannot well be altered now, or only by very slow degrees and at great cost. But in the modern wider streets which have grown up in the last half-century, either on new ground or in the rather rare interests where old conglomerations of streets and houses have been cut through by a new wide road, we have still proceeded on no definite plan; we are still in the accidental stage, and both ancient Greece and modern Paris are a reproach to us in this respect.

There will perhaps always be persons who will differ as to the best ideal of a city in regard to effect; those who will prefer the irregularly laid out city to the formal one, and maintain that it is more picturesque. In a sense it is, when it comes to looking at old cities: but when it comes to modern work, new extensions or new laying-out of existing sites, it has to be remembered that you cannot *make* the picturesque, it must happen of itself; a contrived picturesqueness deceives no one; but you can make the architectural. In London, up to the present time, we are making neither, the Victoria Memorial road being really the first distinct effort made in London towards the formation of an architecturally laid-out road with a centralised culmination. London, like many accidentally formed towns, contains some charming corners which

*Town Planning Conference, London, 10th to 15th October, 1910. Transactions. Published by the Royal Institute of British Architects.

we should be very sorry to lose; but they have to be sought out, they do not come into the usual main lines of route. And these latter are mostly dull and devoid of effect; they are neither picturesque nor architectural.

As M. Augustin Rey said in his excellent paper on "The Growth and Development of Towns," the beauty of a city is, above all, dependent on the beauty of its main thoroughfares, and he observes that even in the finest cities we can mention there are only occasional examples of this beauty; which it is to be feared is only too true. In London, Pall Mall is the one fine street. Regent Street, in a quieter and more old-fashioned way, was another, but we have deliberately spoiled it. Another important suggestion made by M. Rey was that the architectural effect of lighting and aspect is often overlooked. In preparing to discuss the beauty of towns for the first time on scientific and rational lines, he asks us to remember that the beauty of buildings depends to a great extent on the way in which they are lighted by the sun, and that it is no use having beautiful façades which are plunged in shadow or but faintly lighted up by occasional glimmers of sunshine. This is a natural reflection from a Parisian who lives in a city where there is, in summer at all events, a good deal of sunshine; and we quite agree with him as to the admirable way in which the Place de la Concorde has been laid out for effect, with Gabriel's fine façade at the top, facing south and nearly always in sunshine. In London it may seem hardly worth while to arrange a building on a site so as to get sunshine on its best elevation, as there is little probability of getting the sunshine. But the point made by M. Rey is no doubt a good one in a general way, and it has perhaps been rather overlooked.

One of the most remarkable papers in the volume is that of Mr. Crow, the District Surveyor for Whitechapel, on town planning in relation to old and congested areas. He shows a plan of an immense scheme for taking people out of London by radiating railways—he suggests rapid travelling mono-rails, the termini of which lines, falling on a circle some twenty-eight miles out of London, would form the centres of "cities of health." The object of the whole scheme is to relieve overcrowding both in street traffic and in residence. There is something in the scheme, with its radiating map of health districts, which looks, we fear, a little too Utopian for practical realisation; but there are other less heroic points in the paper which are well worth attention; especially as to the sin (illustrated in several photographs) of erecting high buildings in very narrow streets and alleys, where the buildings have previously been much lower, without doing anything to widen the street by setting back the building line; a matter in which the London County Council have themselves in one instance been the sinners.

Colonel Plunkett, in a paper on "Open Spaces and Running Waters," deals not so much with towns as with the need of keeping streams clear of the chance of being contaminated by the proximity of buildings, and especially suggests that their sources should be carefully fenced off and building near them be prohibited. This is rather outside of town planning, but the title of the paper reminds us of another point in regard to the beauty of cities, namely, the charming effect of a running stream through the midst of a town, or even as an incident in the main street in a country town. Wherever there is a chance of such an incident the most should be made of it. It is an incident met with occasionally in a continental town or in some small English country town; but as a rule its possibility is never thought of. We remember many years ago hearing the suggestion made at a meeting to consider the means of improving and rendering pleasanter the poorer parts of towns, when it was received with laughter. It is not, however, the only idea for town improvement which would have been laughed at a generation ago, but which is now perceived to be both practicable and desirable. We have made some progress, at all events; and

the book of the Town-planning Conference may assist us in making further progress.

Coronation Honours.

IN the list of Coronation Honours Art has not, as is often the case, been entirely passed over. We may congratulate both the Government and Sir Ernest George on the knighthood conferred on him as a Past President of the Institute of Architects—so it was stated in the "Times" list of honours; but the honour might very well have been conferred upon him quite independently of the fact of the Past Presidency, as a distinguished architect, author of many fine designs in domestic architecture, as well as an artist of no ordinary accomplishment in water-colour and etching. At the same time, if the honour is supposed to be connected with the official position of President, it is rather singular that the President of the Institute now in office should have been passed over, the more so as Mr. Frank Short has been knighted ostensibly as President of the Society of Painter-Etchers. However, in this case also one may say that, as certainly the finest English etcher of the day, Sir Frank Short has claims to distinction quite irrespective of his official position; and considering all the fine buildings he has erected, and the prominent position he has taken in opposing the St. Paul's Bridge Bill, we should have certainly supposed that the same might be said of Mr. Leonard Stokes. A knighthood to Dr. Arthur Evans will be accepted by every one as only a fitting recognition of his brilliant career as an archæologist; the only surprise would be that it had not come sooner. There is, however, another equally gifted archæologist, who has been much longer at work, Professor Flinders Petrie, who earned recognition of this kind long ago (if he cares for it), and who certainly ought not to have been forgotten.

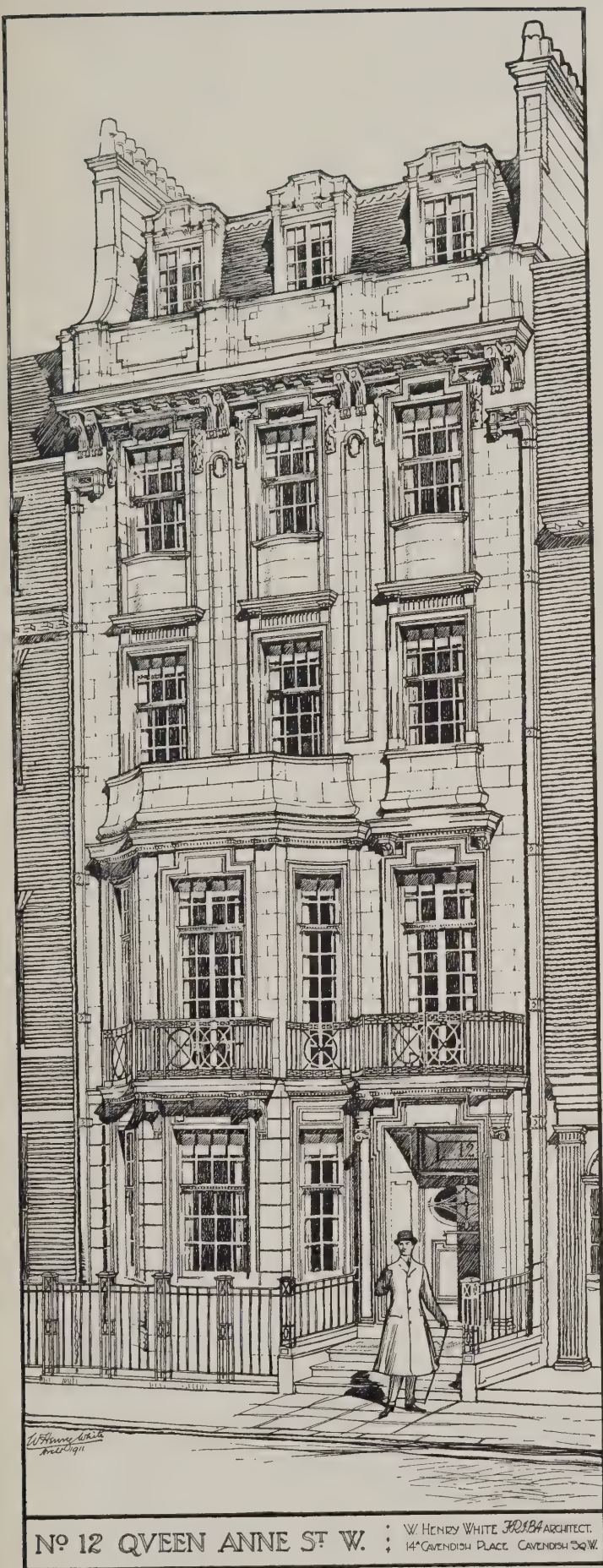
Builders and the National Insurance Bill.

WHEN the text of the National Insurance Bill was made public, we immediately pointed out that it imposed fresh obligations and further burdens upon builders without offering them anything material in return—that whereas the workmen were assured of a handsome interest on their small investment or contribution, the scheme seemed to yield the employers nothing much more substantial than the rather solemn satisfaction of feeling that they would be suffering in the interests of experimental eugenics and supposititious social regeneration. They would be left with the consolation that virtue is its own reward; and possibly to the reflection that the intrusive element of compulsion robs it of much of its native grace and charm. The line we ventured to take has been adopted and extended by the Northern Counties Federation of Building Trades Employers, who, in a report upon the subject presented at a recent meeting at Seaton Carew, protest that no substantial reason has yet been advanced for imposing upon employers the further burden of financing the insurance of the health of their workpeople. The position is stated very clearly in a few trenchant phrases: "The benefit of this insurance will be reaped directly by the workpeople themselves, and indirectly by the State. The employers will gain nothing personally to make them a party to the measure, and their trade is not able to bear the constant imposition of burden upon burden in the way of legislation and taxation." Anticipating the argument that the employer may reimburse himself by adding the cost of the insurance to the price of his work, the Federation report replies that the Workmen's Compensation Act added, in effect, about $\frac{3}{4}$ d. an hour per man to the wages account, and that it has not been practicable to recover this from the client—partly, it may be supposed, because of the exigencies of competition, which compel the employer to make many such sacrifices, but mainly because an increase in charges would naturally reduce the volume of work

to the obvious detriment of both employer and workman, and the consequent depression of the entire industry. It is suggested in the report that health insurance and accident insurance, being inter-dependent, should be combined, but that unemployment is a separate question, presenting, indeed, so vast and complicated a problem as itself to require subdivision. It is further complained that the composition of the proposed advisory and health committees does not afford adequate representation to employers' organisations, while giving undue preponderance to representatives of workmen. Many other points are dealt with very cogently in the report (it is printed in full in another part of the present issue), which is a timely and valuable exposition of serious flaws in a revolutionary Bill, and a clear and forcible, if necessarily incomplete, outline of the employers' case against it. Probably it foreshadows the basis of action of the National Federation of Building Trades Employers, and the Employers' Parliamentary Council, both of which bodies may be depended upon to avail themselves promptly and energetically of every possible means of securing a greater measure of justice than the Bill at present embodies for the interests they represent.

Decoration and Decorum.

IT would be truly delightful to be able to accept without reserve all the praise that has been lavished on the street decorations in honour of the Coronation; but one has to acknowledge that much of the appreciation has been more courtly and conventional than convincing, and much more of it mere perfunctory gush. All that can be ungrudgingly admitted is that this occasion, more than any other that one can recollect, was marked by some glimmerings of a dawning perception of fitness. There was a very welcome recognition that street decoration is a matter in which architects and artists might be usefully consulted, and the result was a distinct improvement on all former efforts. There was sufficient co-operation in general schemes to illustrate the advantages of this principle and recommend its extension. Yet the lack of control over individual caprice was in many instances painfully obvious in what the picturesque reporters called, *usque ad nauseam*, "a riot of colour," and in other ebullitions of æsthetic anarchy, such as the naïve self-advertisement that was perhaps rather less unpardonable in commercial corporations and private traders than in colonial Government agencies, but was at any rate and in either case insufferable. But modesty and restraint are not generally appreciated. A certain Press writer actually rather resents the exercise of these virtues. "In St. Paul's Churchyard," he complains, "there is not so much decoration as usual, the idea being that it would interfere with the dignity of the cathedral." He adds, "I think that is a mistake; nothing can interfere with the dignity of so vast and splendid a pile. Any frivolity of colour only enhances the building, just as the king's jester of old brought into strong relief the dignity of the king." A *fortiori* the more dignified the building, the more foolish the decorations. The writer has stumbled upon the rather consolatory half-truth that, after all, it was not St. Paul's, nor Westminster Abbey, that made the judicious grieve, but the alleged decorations, and on that point none shall say him nay. Nevertheless, the assumption that the dignity of a cathedral can be enhanced by squalid circumstances is of the nature of false doctrine, heresy, and schism. St. Paul's, for example, would suffer no loss by the removal of the buildings which hem it in; and the reason why some of them were very considerably built in pseudo-classical style was no doubt twofold—in order that they might themselves suffer as little as possible by the contrast, and in order that they might offer some sort of subservient apology for their presence in such company. Surely the same law holds good with regard to temporary decorations. Hence the wisdom of avoiding any "riot-of-colour" nonsense in St. Paul's Churchyard. On the other hand, to



NO 12 QUEEN ANNE ST W. : W. HENRY WHITE ARCHT. : 14 CAVENDISH PLACE, CAVENDISH SQ W.

With respect to street architecture, London is steadily growing in grace. The West End, in particular, provides a very large number of excellent examples of the modern regard for architectural style; and a most gratifying note is a certain boldness of character which is at once a welcome departure from mid-Victorian timorousness and a manifestation of due regard for dignity and restraint.

put up in front of Westminster Abbey temporary sheds that mimicked the style of the Abbey may be taken for an excess of virtue; since it appears that these gimcrack constructions have been generally admired—a fact that is here sorrowfully recorded as another strong indication of the standard of taste to which the public of this country has attained. With regard to the general effect of the decorations, it would seem that although we have made a distinct advance in the art of arranging flowers and foliage, festoons and flags, we have still much to learn from the Continent, where the art of disposing these slender resources with deftness and grace, and to harmonious general effect, seems to be inherent; the buildings, the climate, and the atmosphere, however, contributing such elements of success as drive us to despair. The illuminations hardly showed the improvement which might have been expected from the vastly increased facilities now at command.

The Future of the Crystal Palace.

THE HON. LIONEL CUST, writing to the "Times," expresses the opinion that it would be lamentable and indeed discreditable to the nation if the Crystal Palace were to cease to exist and its beautiful grounds, one of the lungs of London, sacrificed to the builder. He declares that "the trouble" is obviously of older standing than the present generation, and dates back to the time when the Crystal Palace was allowed to be diverted from its original purpose as a permanent sequel to the great International Exhibition of 1851, and to degenerate into a place of mere popular amusement. The Crystal Palace was intended to be a permanent nursery for international study of the fine arts. "I have under my hand as I write," says Mr. Cust, "a series of the excellent handbooks compiled to explain the various sections or courts, on which so much learning and money were expended in the reproduction of the finest works of sculpture and architecture. These handbooks were compiled by such authorities as Layard, Penrose, Bonomi, Digby Wyatt, Owen Jones, Scharf, and Waring, and, if a little out of date, still form a basis for an intelligent study of the monuments of ancient and medieval art. The reproductions were made with the greatest care by the best workmen, and nothing has been more deplorable than to see the neglect and decay into which objects of such value and interest have been allowed to lapse. The Crystal Palace was thus consecrated to the cause of the fine arts, and also of music, in which cause it has played a considerable part of no little national importance. Mr. Cust therefore makes the following interesting suggestions: "Possession of the Crystal Palace property would ensure to the nation opportunities amply sufficient for the development of national education in the fine arts, in music, in every branch of natural science. The great glass palace itself might be found useless and have to disappear, but meanwhile any portion of the property not required for public use would remain of considerable, and probably greatly increasing, value to the owner." We happen to possess a set of the excellent handbooks mentioned by Mr. Cust, and we quite share his admiration for them, as well as his regret that the Crystal Palace has been—perhaps unavoidably—diverted from its original purpose. We should like to see a reversion to that purpose, and a worthy Palace of Art substituted for the egregious glass-house which has so obviously had its day.

Liabilities of Builders.

A LEGAL action tried before Mr. Justice Lawrence and a common jury last week illustrates very forcibly the burdensome character of the builder's business. The action was brought by Mr. Thomas J. Davies, a manufacturer of perambulators, against Mr. T. Meader, builder, of Nunhead Crescent, Peckham Rye. It appeared that in February last defendant and a workman were repairing the roof of plaintiff's house, and that while Mr. Davies was examining his motor car, a piece of tile fell from the roof, striking the

radiator, a piece of which flew off and destroyed the sight of plaintiff's left eye. The plaintiff therefore sought to obtain damages from the builder, against whom or his servant he alleged negligence. The defence was a denial of negligence, but the jury found a verdict for the plaintiff, and assessed the damages at £575, for which sum, and costs, judgment was accordingly entered. There is no necessity to comment upon the details or the result of this particular case. It was a most distressing accident, and one can well understand the jury's sympathy with the victim of it. Our point is the serious position of builders with regard to accidents which, trivial and perhaps unavoidable in themselves, may result in serious personal injury, for which the builder may have to pay a small fortune. The frequency with which such deplorable accidents occur points to the wisdom of "third-party" insurance. In other words, the builder, besides insuring against accidents to his own workmen, finds it in a high degree necessary to insure against accidents to the general public. It is open to question whether the law on this subject is altogether equitable, and whether, instead of adding to the builder's burdens as the State is at this moment blandly proposing to do, it should not rather be contemplating some means of readjusting the incidence of this crushing load. Surely it would be only fair to insist that the general public should itself insure against accident, the penalties for which should not be imposed solely on the builder, who may happen to be entirely powerless to prevent it, but perhaps partly upon the funds of the union of which the workman who is commonly the direct cause of it, and partly upon an insurance fund to which the injured person might be expected to subscribe. A third of the total might be contributed by the State; the remaining third being exacted from the builder, upon whom this liability might be judiciously imposed as a means of insuring proper supervision of the work in order to safeguard the public interest. The building trade should remember this point in opposing the unjust incidence of the State Insurance scheme.

WREN'S "PARENTALIA."

BY LAWRENCE WEAVER, F.S.A., HON. A.R.I.B.A.

In presenting to the R.I.B.A. the heirloom copy of the "Parentalia," which he had the good fortune to acquire, Mr. Lawrence Weaver made some interesting comments on the contents, and his paper, read on Monday last, was illustrated by other exhibits bearing more or less directly on the subject.

THE book I have the honour to present to the Institute this evening on behalf of a body of subscribers justly deserves the epithet "unique." Associated as it is with the man who made the greatest mark not only on London's buildings but on the larger field of English architecture, I trust that the following particulars as to its contents will be of interest.

Sir Christopher Wren died in 1723. His son, also named Christopher, piously if somewhat incompetently compiled the *Parentalia*, being notes relating to Matthew Wren, Bishop of Ely; Christopher Wren, Dean of Windsor; and Sir Christopher, the architect. The book can hardly be called a biography, but it has served to supply the materials for the various lives since written. Sir Christopher's grandson, Stephen, published the volume in 1750, Christopher the younger having died in 1747.

The manuscript of the book is in the Library of the Royal Society, to whom it was "presented by Mr. Wren, February 21st, 1750-1." A reprint of the sections relating to Sir Christopher alone was issued in 1903 by Mr. C. R. Ashbee, and some additional drawings of Wren's churches were included therein. In one respect, however, this reprint does the original publication an injustice. Wren's tract on the Artemision at Ephesus is illustrated by engravings which do



Numero Dendro et Mensura

not reproduce the extraordinarily delicate execution of the drawings bound up with the manuscript of the *Parentalia*, as do the engravings in the original issue of the book by the hand of Flitcroft.

Stephen Wren was unmarried, yet owned a daughter Margaret, who assumed the name of her father. The copy now on the table bears her autograph on the title-page, and on the very delightful binding her initials "M. W." in gold. By her it was given back into the legitimate line. The family of Sir Christopher ceased in the male line with the death of Christopher Roberts Wren, his great-great-grandson. The latter's daughter married Mr. Hoskyns, who assumed the Wren Arms by Royal License and became Mr. Wren Hoskyns. Her daughter married the Rev. Laurence Pigott, and has no children. In Easter, 1909, I saw for the first time the heirloom copy of the *Parentalia*. After somewhat prolonged negotiations I was successful in arranging with Mrs. Pigott that I should purchase the volume for £200, if I could secure subscriptions for that amount, in order that the book might be deposited for ever with this Institute. Owing to the generosity of a number of gentlemen, some members of the Institute, some of the Society of Antiquaries, and some of both, I was able to achieve this end, and Mrs. Pigott helped me materially by contributing £45 of the total herself. I should explain that she felt it a duty to receive for the book a sum of not less than £200 which she could bequeath to some collateral descendants of Wren in indifferent circumstances, and she has made provision to this end. I may add that when I first became acquainted with the book, it was designed that it should go out of the country on Mrs. Pigott's decease, and I think it fortunate that by the ready help of the lovers of Wren's memory such a misfortune has been averted. In the box which contains the *Parentalia* I have deposited another, but slim, book which contains a list of the subscribers and their autographs, and I have ventured to add copies of my previous notes on the book, so that its whole story may be conveniently accessible..

The *Parentalia* is interleaved with various manuscripts, engravings, and drawings. The original *Parentalia* had eleven illustrations only, viz., portraits of the three great Wrens and of Christopher (the compiler), two plates of mathematical schemes (rather uninteresting), two of the

rafters, etc., of the Sheldonian Theatre, one of some architectural diagrams, and the Ephesus plan and elevation already mentioned. To the interleaved copy have been added about 140 engravings, including portraits of Wren's contemporaries and views of his and other buildings, etc., as, for example, Evelyn's plan for the rebuilding of London, in addition to the important manuscripts and drawings which Mr. Weaver proceeded to describe.

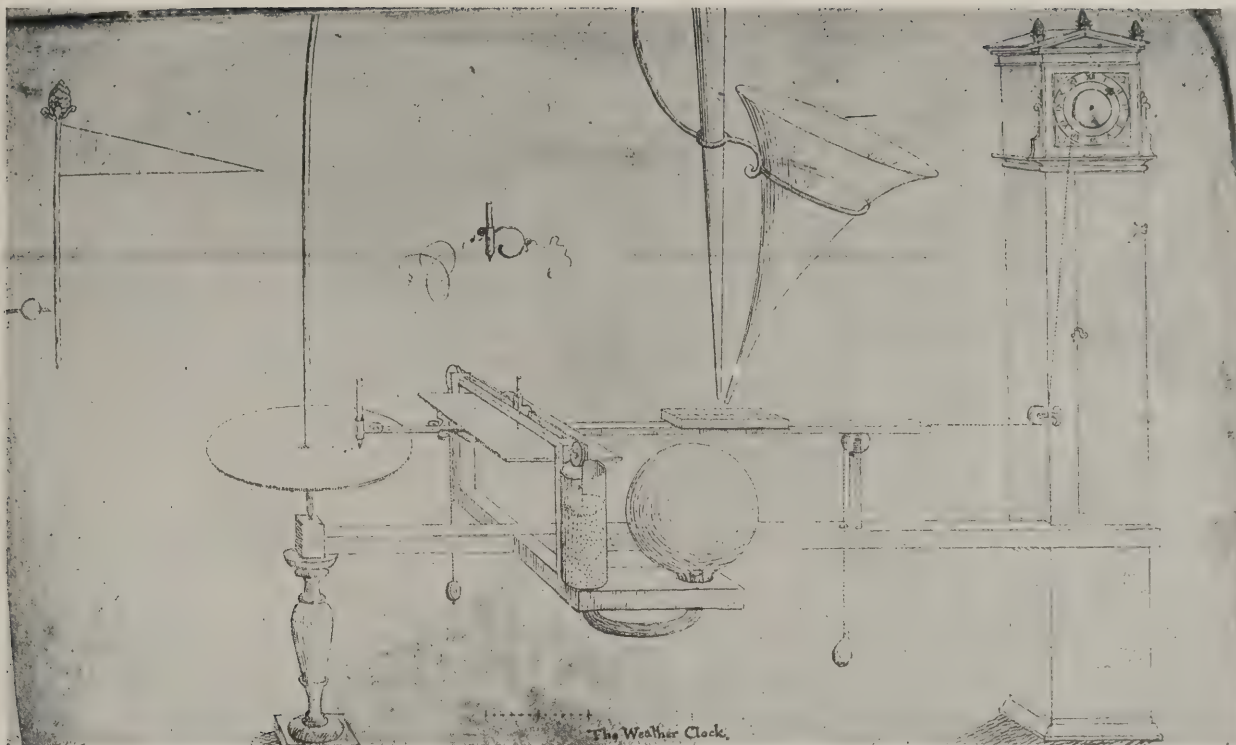
Having described in detail the contents of the *Parentalia*, Mr. Weaver referred to the interesting exhibits he had collected. These included a short series of photographs of buildings either designed by Wren or attributed to him or belonging to his school, some buildings which it is reasonable to assume had their influence on his work, and others which in turn were the result, more or less, of his influence. He showed also, by the courtesy of the Earl of Macclesfield, some photographs of the more interesting pages of Wotton's "Elements of Architecture" (1624), which is in the library of Shirburn Castle.

On page 48 Wren makes a practical query with regard to the laying of stones or bricks wedgewise in a flat arch. Where Wotton says of staircases (on page 58) that "the breadth of every single step should never be less than one foot, nor more than eighteen inches," Wren adds "nor so much as eighteen inches at any time, for if a step exceed twelve, those who have but short (legs) must tread twice upon the same step, especially in descent, which, to women especially, is troublesome, and dangerous to the hasty." One bears in mind in this connection that Wren himself was of short stature. He adds other notes on the making of staircases on the same page. On page 55 Wotton discourses of the advantage of luminous rooms, "Indeed, I must confess that a frank light can misbecome no edifice whatsoever, temples only excepted, which were anciently dark, as they are likewise at this day in some proportion, devotion more requiring collected than defused spirits," on which Wren makes the comment that Christ Church in London was practically nothing but window, and was fitter for a stage than for a church, "although for the kind of building it is a thorough piece of work." On gardens and their treatment with aqueducts, walks, etc., Wren makes the note, "And for disposing the current of a river to a mighty



WREN AS A YOUNG MAN.

From an oil painting in the possession of Mrs. Pigott.



FROM THE HEIRLOOM COPY OF "PARENTALIA": WREN'S WEATHER CLOCK.

L'ECOLE DES BEAUX-ARTS.

So much has of late been said for and against the architectural training afforded by the Ecole des Beaux-Arts, that a short account of that remarkable institution will be useful and interesting to many to whom it is but little more than an oft-recurring name.

The Building.

The buildings in which the principal institution in France for art education is housed are situated on the Quai Malaquais and the Rue Bonaparte in Paris. They occupy the site of the former Musée des Petits Augustus, with the addition, in 1884, of the Hôtel de Chimay. They are mainly the work of the architect Duban and his successor Coquart. The foundation is ancient, the school having originated with the establishment, in 1648, under Mazarin, of the Académie de Peinture et de Sculpture, and, in 1671, under Colbert, of the Académie d'Architecture. During the Revolution all the academies were abolished. In 1803 the Académie des Beaux-Arts was formed as a section of the Institut de France, but it was not until 1819 that regular courses in architecture were instituted.

The most material modification of the regulations of 1819 occurred in 1863, when the official ateliers were sanctioned. The school was placed under the direction of the Minister of Fine Arts, its actual administration being entrusted to a director appointed by the Minister.

The Organisation.

The school is organised on university lines. It prescribes courses of work, gives lectures and instruction, arranges and adjudicates upon competitions in design, drawing, and modelling, conducting all examinations and making all the awards. Attendance on its courses is not compulsory; but the student must, each year, in order to keep his name on the roll, submit two competitive designs, or attend two examinations in the sciences, or submit one design and attend one examination. The student, however, is—or used to be—considered to be too old after thirty, when he must go down.

The courses are gratuitous, and a limited number of foreigners are admitted on the same footing as Frenchmen. The candidate must give satisfaction in entrance examinations in elementary design, drawing from the cast, modelling, arithmetic, elementary and descriptive geometry, and history. On getting through, the student is entered as a member of the second class. He proceeds to the first class on the cumulative value of the marks obtained in successive examinations in architectural design, archæology, drawing from the cast or the figure, modelling, descriptive geometry, stereotomy, perspective, mathematics, and construction. Between two and three years is the average duration of the curriculum. When five points or *valeurs* have been obtained in the first class, in which the chief subject of study is design, with some attention to archæology, modelling, and drawing from the figure, the student may qualify for the certificat d'Etudes de l'Ecole. To qualify as a candidate for the highest honour, the Diplôme d'Architecte, the student must have obtained at least twelve *valeurs* in the first class, and have passed at least one year in superintending the construction of a building under a Government architect. He must then sit for an examination comprising the complete working drawings and specifications of a projected building, on which searching questions are put, and he must also satisfy the examiners in the elements of physics and chemistry as applied to construction, history of architecture, and law relating to building. Only a small proportion of the students gain this diploma, and less than half the total number in the school enter the first class.

Open Court.

Nearly all the honours and awards are open to foreigners. An exception is the Grand Prix de Rome, which, though awarded by the school, is properly a national prize, and the competition for it is confined to natives, whether members of the school or not, who are between the ages of fifteen and thirty. It was founded in 1720, and is awarded for the design of some monumental building. The lucky winner not only enjoys a stay of three

years in Rome at the expense of the French Government, but is assured of a position as Government architect.

Three school ateliers were instituted in 1863, previous to which time every student was necessarily the pupil of some outside instructor. The patron or instructor of each atelier is a practising architect of recognised standing; and the rivalry or emulousness of the various ateliers possibly tends to put the students on their mettle, although it has been thought to result in too loyal emulation of the mannerisms of the various patrons.

Loge and Projet.

In each class there are six architectural competitions or *projets*. These competitions are curiously conducted. Each candidate is locked in a stall or *loge* for a period not exceeding twelve hours, and during this period of solitary confinement, without books or advice, he makes his sketch or *projet*. He hands in his sketch, of which he keeps a tracing, which next day he submits to the patron of his atelier, who subjects it to searching criticism, and advises the student how to proceed with it, or whether he ought to abandon it. If he goes on with it, he works at it for about two months, with the advice and assistance of his fellow-students as well as that of the patron. All the most skilled draughtsmen of the atelier assist in making the final drawings.

Great stress is laid on the study and drawing of the plan, and equally attention is given to the finish of the elevation, but perspectives, save in detail, are not commonly required. The projection is insisted on. The *projets*, when finished, are exhibited, and are assessed by a jury of twenty-nine architects, including the patrons, who are, of course, in a minority; and the Professor of Theory delivers a set criticism of the premiated designs. The student, while enrolled at the Beaux-Arts, is engaged for some part of his time on work in the office of some architect, frequently that of his patron.

A Liberal Institution.

It has been said of the Ecole that its function is to give those who ask for it the only thing a school can give—a method

of work. It makes no effort to bring people to its classes. Its purpose is not to defend nor to promulgate any special theories. The right to teach is the right of everyone at the Ecole, provided only he can obtain a sufficient number of followers. And he may teach what he pleases. A newcomer may open an atelier to teach Oceanian or Romanesque, or be a fanatic in Art Nouveau or Tudor; the Ecole does not object. His pupils have selected him, and are following him because they want him, and only so long as they want him. A foreigner once said to one of the professors: "What differentiates your school from those I saw in Italy, in England, and in Austria, is its complete liberalism; the way in which a pupil here is treated as a man—as a man who has the right to select his own master, to choose his own artistic way." As for the pupils, they work, and live, and laugh.

[Student Life.]

The life of the Ecole student has afforded the theme of much entertaining literature, which probably owes much of its tone to the diary of Marie Bashkirtseff and the novels of George du Maurier. The descriptions of student life, and the life itself, doubtless react on each other, often quite unconsciously: even as the students themselves assist each other's education when they think they are merely amusing themselves. Hence this sketch by one of the most recent writers on this perennially joyous topic:

The two weeks or three weeks following a *loge* are weeks of tranquil repose. The atelier is deserted, the comrades are scattered, each amusing himself as he wills. There are bicycle trips to Pierrefont and Chartres, or marvellously economical jaunts through the little Normandy towns, Senlis, Beauvais, Amiens; and, always, there is Touraine. The comrades meet in out-of-way corners, in Mère Poularde's kitchen at St. Michel, or the Café Rabelais under the walls of Blois, where they greet each other with loud cries.

Out of School.

"Ah! te voila! ignoble personnage," shouts the comrade Pigeard, spying his old friend Alaux sipping coffee in the corner, and they grasp hands and plunge at once into tales of their travels with critical appreciation of this or that château or cathedral. The school is forgotten, but they are at school nevertheless, learning more than they dream of in the greatest architectural book of the world.

Of course these high-spirited young men with (more or less) artistic temperaments are occasionally guilty of dissolute and disreputable deeds. For instance, they gild the feet of the concierge's cat, and make the animal very drunk on brandy. Also they write upon the walls any gem of thought that happens to strike them as being particularly worthy of record, as: "On this day, September 12th, the comrade Nathan has said, 'Architecture? It is the art of copying bestially all that there is of the most beautiful in Antiquity.'"

A Lesson in Modesty.

One of the students, not remarkable for excess of modesty, gives a glowing account of vacation adventures as a citizen soldier. He has had his photograph taken in that character. The picture is produced and prodigiously admired. It is suggested to him that the atelier would gratefully appreciate a gift of one of these photographs to be cherished in its archives. He promptly accedes, "only to find, on the day following, his presentment elaborately framed and prominently hung after having been subjected to every monstrous indignity possible to clever draughtsmen. Hat, gun, distant mountains, all are meta-

morphosed into something new and strange; only the face remains palpably and unmistakably his. How can he ever raise his voice again with that effigy staring above him? Thus lessons other than architectural are learned."

Co-operative Effort.

Something akin to the fagging system is in vogue. The new man has his "service" to do. There is one day in the week when he is at the beck and call of his older associates. Between times he works on his own *projets*, or toils for a comrade who needs a helping hand.

Frank Criticism.

The school programme is arranged so that first and second class *projets* are completed in alternate months, and students or the two classes are free to help one another—an opportunity which is seized with truly splendid avidity. This is another of the specific traits of atelier activity which cannot fail to awaken enthusiasm. The Anglo-Saxon is a curious combination of self-reliance and supersensitiveness. He works doggedly, industriously, blunderingly, sheepishly, inclined to hide his youthful efforts from an over curious eye. But his French comrade will have none of this. A man's work is but a part of the atelier's work, and it is the interest of all that prompts some bearded veteran to slide gracefully into the novice's place, quickly covering the drawing with a scrap of tracing paper while his practised hands fly over the surface, indicating with telling precision faults which seem to leap under his touch.

"Mais, mon cher ami!" he will exclaim good-humouredly, "your columns are absurd. Look at the entasis. They are like countrymen's umbrellas!"

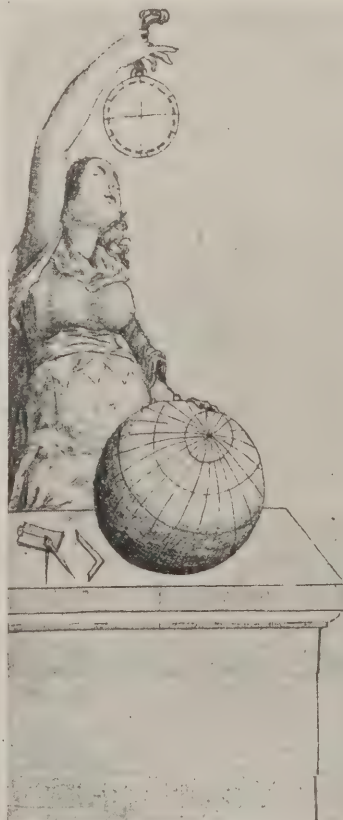
It is these illuminating flashes of criticism from one pupil to another which constitute nine-tenths of the teaching strength of this great school. Without the strong inner spirit of co-operation with which, with all their joking and surface

gaiety, these young Latins infuse the atelier life, the results would be as nothing.

The Craze of the Moment.

Under the lead of a strong personality, the young students will rush into strange regions of design, and oftentimes bow before false gods. "For two months," writes Mr. George S. Chappell (upon whose delightful reminiscences a large draught is here being made) "it will be Delafosse and the 'belle époque' of Louis XVI. Then there is a sudden reversion to the Roman sternness of Piranesi. Terrific architecture is evolved from his prison plates; and as for Delafosse—faugh!—away with his gim-cracks and bibelots. But Piranesi passes too; the pendulum swings back to the moderns and the sketches of a brilliant German—Otto Reith—are thumbed and worn. Il n'y a qu'à ça! Gigantic women struggle under huge blocks of stone, tremendous arches span half a city, while man, and like, crawls below. Or it may be the trick of some clever draughtsman which sets the little world by its ears. Jack Pope's clouds composed entirely of telegraph wires, Brown's soft line drawn with a wooden pen, Chester Aldrich's use of smalt or Dujarric's luminous combination of ink and charcoal! Who is it now, I wonder?"

It might readily be asked whither this mad kaleidoscope is whirling, and where is its control. The answer is found in that remaining tenth of the teaching force, the Patrons who compose the Jury. For though it can be almost positively stated that their actual teaching is relatively small, their corrective power is absolute. The whims of popular taste may veer and shift as they will, but they must in the end come to the judgment seat, and the judges there presiding are wise and discerning. So Alaux, who has drawn a "bonne femme" forty feet high on top of his city hall, misses his mention, and ponders sadly. "Perhaps she was not high enough," he says with a wry smile.



R^{do} Patri D^{no} Chr^o W^r. S^t. Dⁿⁱ & Dⁿⁱ. W.
Chr^o Filius Hoc suum Panorganum Astronom-
micum D.D.

XIII^o. Calend. IX^{bris}. An^o. Dⁿⁱ. 1645
Etatis pene Trilustris Natali ultimo.

Si vacat & E^{rum} cessant (Pater Alme) tuarum
Pondera, devota respice Proles Opus:
Hic ego Sydereos tentavi pingere Motus,
Coelicaq^{ue} in modulos conciliare breves.
Quos prolapsa Diu renouentur Tempora gyro,
Sæculaq^{ue} & Menses, imparilesq^{ue} Dies;
Quomodo Sol abeat, redeatq^{ue}, & temperet Annum;
Et Raptum contra grande perennet Iter.
Cur nascens gracili, pleno Orbe refulget Adulta,
Cur gerat extinctas Mensuræ Luna facies.
His ego Xuminibus dum lito, atq^{ue} Addua Mundi
Scrutor, & ^(arcanas) Ignotas conor inire Vias;
Adiuv O favescq^{ue} Pater, succurre volenti,
Sussensum implumis Dirige Proles iter.
Ne male, præcipiti, nimium præ viribus audax
(Sorte sub Icared) lapsus ab Axe ruam:
Jure accepta Tibi refero mea Flumina; Pulchre
Derivata suum respicit Vnda Caput:
Te Duce, fert Animus, Studiisq^{ue} sublimibus hisce
Patris dum lubet delat^{ur} adire Domos.

FROM THE HEIRLOOM COPY OF "PARENTALIA": A LETTER IN LATIN
VERSE WRITTEN BY WREN TO HIS FATHER

The Patrons.

These admirable men, the Patrons, serve unselfishly and loyally with little or no remuneration. From their pupils they receive nothing; whether or not they are salaried by the Government is a dark mystery, into which the average pupil does not delve. Their ultimate reward seems to be in Government commissions for public buildings and outside work picked up in the regular way. But no success or lack of it can shake the devotion which is returned with deep respect and affection by its recipients. Twice or thrice a week at a fixed hour, the Patron visits his pupils, and his visits are simple and impressive. The Babel of noise ceases on the instant of his arrival, balls of paper drop silently into baskets, rampant T-squares slip softly under cover. He stands for a moment on the threshold—a tactful pause to enable some belated comrade to climb down from the water-cooler, where he has been intent on baptising a *nouveau*.

His visit is short. He spends perhaps two minutes before each board, and is followed round by the entire atelier. His remarks are brief and pointed, practical and informal—not at all of the character of a lecture on architecture—mere hints; but they are eagerly assimilated.

The Fiery Charrette.

Sometimes the students work with feverish energy. That is mainly during the *charrette* period. The *charrette* is in reality a primitive sort of push-cart, in which the finished *projets* are carried off for exhibition and judgment; but its name is the symbol for strenuous labour. "In the battered ateliers, day by day," says Mr. Chappell, "the working hours are lengthened, the babel of conversation is slightly less animated, and, as the light wanes, there is a demand for candles to be stuck in huge iron candlesticks, which it is the *nouveau's* duty to collect from stray corners, and to distribute as equitably as possible to young men who cry bitterly that they are working in a profound black."

The Nigger's Opportunities.

If the *nouveau* is indusrious and shows interest, he soon finds himself in demand as a "Nigger" to work out some detail for one of the ancients, to cast shadows, "pocher" a plan, ink in some joints, or to perform any office within his capabilities. In these opportunities lies much of the most valuable instruction made possible by the flexible mixing-up of students of all grades—a tremendous advantage over the cut-and-dried class system. The beginner is set down among the really strong men of the school, who are making the records of the year, potential Grand Prix men; he sees intimately not one projet, but thirty, and, from the constant exchange of criticism, the violent arguments pro and contra every detail of theoretical planning, he absorbs knowledge through his very pores. He may not digest it, but it is there. Let Mr. Chappell describe the last agonies of *charrette*:—"Eleven, twelve, one, two, the rusty-voiced clock ticks off the midnight hours, and the cool approaching dawn of morning; now the jutting chimneys and mansards of neighbouring houses stand black against the silver sky. Haggard helpers who have snatched a few hours of sleep arrive in nervous haste, and are instantly at work. The *nouveaux* are despatched for coffee and 'crescents,' warm from the morning's baking, while the more forward toilers dash to the little kitchen at the corner, where they gulp down bowls of onion soup—a marvellous restorative. Suddenly, Pigeard, the luxurious, who has been overseeing his slaves, emits a scream

of rage. 'Sacred name of a name! Imbecile that you are, you have blacked in the windows and made the walls transparent!'

"Alas, it is too true! The goggle-eyed *nouveau* to whom has been entrusted the plan of Pigeard, harried and driven by his remorseless master, has committed the unforgiveable crime. The drawing is ruined, hopelessly, irretrievably ruined. But the outburst is over; with prompt decision Pigeard rips the offending sheet from the board and tacks a fresh one in its place. No time for moistening, stretching and drying now; the sun has already reached the second window on the old hotel opposite, where geraniums gleam on the iron; the quai gates close with a bang. Everything hangs on that. In the meantime, the drawings must be not only finished, but also mounted and tastefully decorated with bands of gray and gold paper.

A Warm Two Minutes.

"The lower courtyard of the atelier is a whirlpool of activity. Wild-eyed, the comrades rush to and fro, their hands dripping with hot flour paste. The gray bands, the gold bands, à chassiss! Where in the name of the devil's dam are the chassiss? And the charette is there, under the archway. Two minutes before they depart. Charrette! charrette! come on everybody. En voiture! Slam, bang; pile them in. Allez, pull, you nouveaux! No, wait, here is another—Pigeard rushes across the court with the redrawn plan, wet and glistening.

"Bring the bands!" he howls—and paper and paste-pot go lumbering after him between two exhausted comrades, who complete their work on various street corners along the route. A cheer bursts from the waiting crowd as the pack swings into view.

"Charrette . . . hurry, you snails. Ah! les sales Laloux."

With a last final crash the wheels strike the curb, the drawings are hauled out by the breathless runners, and handed over to the guardians. Pouf! . . . c'est fini! another projet over, and Thursday the loge for the next one."

OBITUARY.

We regret to see announced the death of the Rev. W. J. Loftie, an archaeologist and an amateur writer on architecture of considerable accomplishment, though his attitude towards modern architects was not calculated to render him a *persona grata* to the profession. Mr. Loftie was one of a small group of writers and art-critics who adopted the position that architects at all events were always wrong, and that whatever building was under discussion it was safe to find fault with the architect. This is a tendency that is rather dying out, but was very prominent in the Press some twenty years ago. Apart from this, Mr. Loftie was an accomplished and enthusiastic archaeologist, more especially in regard to London sites and buildings, and his "History of London," though not quite free from errors as to fact, is a well-written book which will probably always have its value. His "London Afternoons," which might be regarded as a kind of sequel to the History, contains also a great deal of information on old London put into an interesting and readable form, his object being to escape from the mere dry hand-book style of writing, and to render these bits of ancient history picturesque and vivid to the reader. Mr. Loftie was much valued for his personal qualities by a large circle of friends.

ENQUIRIES ANSWERED.

Australian Construction: Oak Work.

S. J. W. W. (Leicester) writes: "(1) What books are there dealing with the construction of buildings in Australia?"

"(2) What is the best preparation for preserving oak work? I am interested in a church where the oak has not been touched for years, if ever."

—(1) "Australian Architecture," by Robt. J. Haddon (published by G. Robertson and Co., Melbourne, 15s. net), has a section devoted to construction, with special reference to Australian needs, but the methods shown do not differ widely from those prevalent in England, and still less from those of America, for which such a book as Kidder's "Building Construction," published by W. T. Canstock, New York, is invaluable. Either book can probably be obtained through Mr. B. T. Batsford, of 94, High Holborn.

—(2) There appears to be no preparation for preserving oak work which does not ruin its appearance. Querist does not say whether the oak is internal or external, or whether modern or ancient. If internal (whether ancient or modern), no preservative application is needed if it is kept dry; and if external, and tending to decay, it is a question whether the remedy is not worse than the disease. Old timber should never have the surfaces disturbed, or be coated with oil or varnish. G.

Paint on Asbestos Sheets.

CONSTANT READER (Yorkshire) writes: "Two years ago I erected a small open-air treatment pavilion of timber, lining the inside with asbestos sheets, and forming the panels on the outside with the same material. The directions of the makers for painting were closely followed, a coating of silicate of soda being applied to stop porosity. The paint on the exterior has, in a great part, shelled off, and that of the interior has run off through ordinary washing. What measures should be taken to remedy this defect?"

—So-called asbestos sheets are composed usually of Portland cement and asbestos fibre in varying proportions, and in some makes the proportion of asbestos is low. In any case, however, the presence of Portland cement renders painting risky until the material has matured and petrified, and the writer has never found a process which will successfully anticipate nature in this particular. If the work is well smoothed and rubbed down, it is probable that a satisfactory result can now be obtained by merely repainting in the ordinary way, as for cement rendering. X.

Government Appointments.

A CONSTANT READER writes: "I am desirous of obtaining a post under the Foreign Office as architect, surveyor, or engineer. Kindly state which of the three departments has the best openings."

—We are not aware of the employment of any persons in the capacities mentioned in connection with the Foreign Office. The number of architects and surveyors in the service of the Government is quite small, the Departments in which they are employed being the Office of Works, Admiralty, War Office, Post Office, Local Government Board, Board of Education, and Home Office. Vacancies are not frequent, and appointments are usually made by the President or Chief of the Department concerned. The Civil Service Commissioners, Burlington Gardens, W., would perhaps be able to supply fuller particulars.

COMPETITIONS.

St. Faith's Church, North Wilford.

Designs for St. Faith's Church, North Wilford, have been submitted by seven firms in a competition under the auspices of the Nottingham Architectural Society. Mr. W. D. Caröe, F.R.I.B.A., the architect to Southwell Cathedral, was elected by the committee of the Church Extension Society for the Archdeaconry of Nottingham as assessor, and he has made his award. He has placed the designs of Messrs. Sutton and Gregory first and third, and one by Mr. F. E. Littler second. Seven firms sent in designs. The plans which have been placed first provide for a church planned with a nave, north and south aisles, north and south transepts, chancel, choir vestry, priests' vestry, organ chamber over the choir vestry, and a morning chapel, there being main entrances on the north and south side. The total accommodation is for 666 worshippers, and the cost is put down at over £6,000.

Bradford Royal Infirmary Competition.

Mr. Keith D. Young, F.R.I.B.A., the assessor, has now announced his awards in the above competition, which are as follows: 1st prize, Mr. Wm. A. Pite, London; 2nd prize, Messrs. F. E. Halford and A. E. Cutler, London; 3rd prize, Messrs. Arthur Marshall, P. D. Prior, and W. A. Smith, Nottingham.

New Town Hall, Riga.

The "Standard" states that Riga is about to build a new town hall, and invites plans from architects all over the world, offering premiums of £600, £400, and £200. The building is to cost £100,000.

The Lay-out of Canberra.

The particulars of the great competition for the lay-out of the coming Federal Capital of Australia at Canberra will shortly be available for British architects. The United States and Canada have had so much more first-hand experience in these schemes that it is not surprising to learn that the first shipment of 150 sets of conditions with panoramic views of the site, have been despatched to Ottawa, Chicago, Washington, and New York. Similar particulars will go to Berlin, Paris, South Africa, and New Zealand. This competition is not concerned with the buildings, but only with the lay-out of the site at Canberra.

LIST OF COMPETITIONS OPEN.

JULY 1. CHAPEL AND SCHOOLROOMS, SWANSEA.—Competitive designs are invited for a chapel, schoolrooms, and class-rooms at the junction of St. Alban's Road and Finbury Terrace, Swansea.—Particulars from D. Walters, 19, Brooklands Terrace, Swansea.

JULY 7. SECONDARY SCHOOL FOR GIRLS, NORTHAMPTON.—The Northampton Borough Education Committee invite architects practising in the borough or county of Northampton to submit, on the 7th of July next, plans for a secondary school for girls, to be erected in St. George's Avenue, Northampton. Particulars from Stewart Beattie, secretary, Education Offices, 4, St. Giles Street, Northampton.

JULY 31. ELEMENTARY SCHOOL, LOWESTOFT.—Premiums of twenty, ten, and five guineas are offered by Lowestoft Education Committee for designs for an elementary school for 500 boys, to be erected at Roman Hill. Particulars on payment of

10s. 6d. Applications to be received not later than June 24. Designs to be sent by July 31. Address, R. Beattie Nicholson, Town Clerk, Town Hall, Lowestoft.

JULY 31. PARLIAMENT BUILDINGS, WELLINGTON, NEW ZEALAND.—Premiums, £1,000, £500, £300, and £200. Particulars, Minister of Public Works, Wellington, New Zealand.

JULY 31. DESIGN FOR AN IDEAL COUNTRY HOUSE.—The "Daily Mail" offers a prize of £100 for a design for a country house to cost £900 to £1,100. Architectural assessors, Mr. E. C. T. Monson, F.R.I.B.A., M.S.A., and Mr. Edwin J. Sadgrove, F.R.I.B.A., M.S.A. Particulars from Carmelite House, E.C.

AUGUST 15. MONUMENT AT BERNE, to celebrate the foundation of the International Telegraph Union. Copies of the conditions can be seen at the R.I.B.A. Library, 9, Conduit Street, W. Particulars in our issue of January 11th.

SEPTEMBER 12-25. COURTS OF JUSTICE, ATHENS.—Competition open to foreign architects. Cost of building not to exceed £160,000. First and second premiums, £800 and £320. Plans, estimated costs and fee of £8 required. Particulars to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C., and in the library of the R.I.B.A.

No date.—**NEW BAPTIST CHURCH, NOTTINGHAM.**—Nottingham architects wishing to enter a limited competition for plans of a new Baptist church and premises are requested to communicate with Messrs. Rorke and Jackson, solicitors, King Street, Nottingham.

YEAR'S WORK AT HAMPSTEAD GARDEN SUBURB.

The Right Hon. Alfred Lyttleton, K.C., M.P., presided, at the Holborn Town Hall, over the annual general meeting of the Hampstead Garden Suburb Trust, Ltd., in presenting the report the chairman said the company had to report a successful year of working. At the last meeting in 1910 the shares and debenture stock stood at £43,088 and £109,797 respectively; this year they had risen to £45,803 and £117,203. The balance on revenue account was £1,527, which, added to the balance of last year's account, made a total of £1,958. Out of this the directors recommended a dividend of 5 per cent. on the Ordinary shares, leaving £964 to be carried forward. The value of the houses on the estate is now about £573,000, representing, with the land and roads, a capital value of over £750,000. During the year the directors had leased an additional 112 acres from the Ecclesiastical Commissioners, and the Co-partnership Tenants, Ltd., working in co-operation with the Trust, had arranged to take up from the same body a further 300 acres of adjoining land. This will make a total area of 650 acres, or more than one square mile.

Errata.

In the article on "Calculations of Reinforced Concrete Beams and Slabs," by Mr. Arthur Matthews, published in our issue for last week, there were two printer's errors. In the top line of the middle column on page 655 the formula should have been given as $t=16,000$ —not $t=1,600$, and in the third line from the top of the right-hand column on page 656 the working stress in steel should have been stated as 17,000 lbs. per square inch—not 170,000.

THE TALLEST BUILDING.

A new building, which will be higher than either the Singer or Metropolitan towers, and will be exceeded in height only by the Eiffel Tower, is to be erected in New York. It is to be known as the Woolworth Building, and will rise to 775 ft. above the kerb. It will have a frontage of about 155 ft. on Broadway, and a depth of about 200 ft. The foundations will be carried down to solid rock, 110 ft. below the kerb. On the Broadway front a large tower, measuring 84 ft. by 86 ft. at the base, begins at the 31st floor, and is carried with vertical walls to the 42nd floor, where the dimensions are 69 ft. by 71 ft. It is then continued to the 47th floor, where the measurements are 59 ft. by 61 ft., which continue until the 50th floor. From the 31st to the 50th floors the tower is 270 ft. in height, and at this elevation it is surmounted by a pyramid, 105 ft. high and 54 ft. square, containing the five highest floors, and an observation gallery situated 730 ft. above the street level. There are only two storeys below the kerb. The height of the individual storeys varies between 12½ ft. and 20 ft., most of them being 12½ ft. The steel framework will contain about 20,000 tons of metal. The exterior walls will be of granite up to the fifth floor, and of terra-cotta above that height, and the partitions will be composed of hollow brickwork 8 in. thick. The building will be equipped with 26 elevators. It is designed in accordance with the New York building code, which allows 150 lbs. per sq. ft. on the first and basement floors, and 75 lbs. on each of the others. A uniform wind pressure of 30 lbs. per sq. ft. over the entire surface of the building is provided for.

BLACKPOOL PROMENADE WIDENING.

This scheme, devised by Mr. J. S. Brodie, comprises a promenade with a minimum width, opposite the Hotel Metropole, of 100 ft., and also terrace seats and a lower walk 30 ft. in width, with a concave sea wall towards the sea. The lower walk will form a continuation of the North Shore lower walk round to the westward of the hotel, rising by a gradient to the level of the promenade near the North Pier. An important feature of the scheme will be the provision of sunk gardens, which will afford a welcome relief.

The most important structural work involved by the scheme is the concrete sea wall and apron, which are necessary to support the huge mass of sand on the one hand, and to withstand the force of the sea on the other hand. This wall is more than 400 yards long, varies in height between 26 ft. and 37 ft., and is 11 ft. thick at the base. This wall has been constructed throughout between the tides, and without any cofferdam work. It goes down 8 ft. below the level of the sand, and is built entirely of Portland cement concrete faced with basalt stone. It will be provided with an apron throughout its entire length at a slope of 1 to 1½. At the toe of the apron ring piles are driven 12 ft. apart, to which the permanent waling and sheeting piles are secured. The apron is formed of consolidated sand covered with a layer of concrete 2 ft. 6 in. thick, and faced with basalt stone grouted and bedded in cement mortar. Roughly 33,500 cubic yards of concrete will be required for the entire work, and the facings will necessitate the use of 6,000 tons of basalt stone, while the sand for filling purposes amounts to no less than 160,000 cubic yards. The cost of the work will be about £40,000.

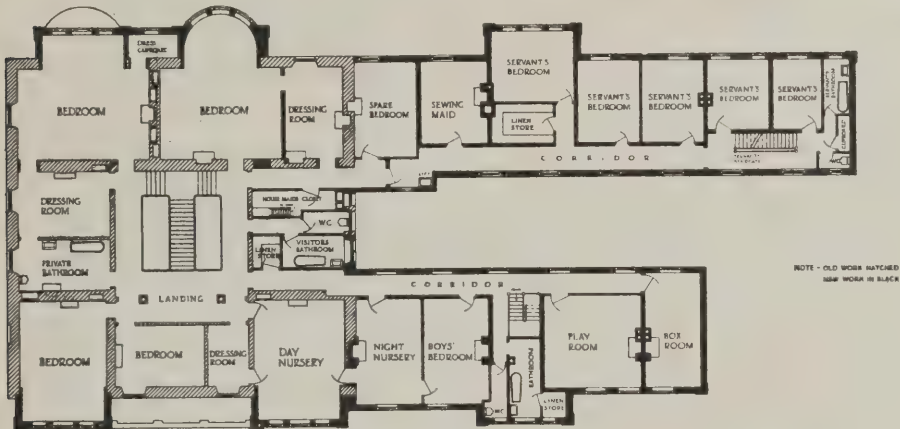
HOLLINS HALL, RIPLEY, YORKS.

This house is beautifully situated in Nidderdale, about four miles from Harrogate. The original house was built in the year 1821, and was formerly the seat of Mr. T. R. D. Wright, Recorder of Bradford. It was purchased by the present owner, Mr. F. M. Jowitt, and the alterations shown upon the plans and photographs were carried out by Mr. G. W. Atkinson, of Leeds, the following being a list of the contractors for the work:— Wm. Thompson and Sons, Leeds, general contractors; Alfred Whitehead, Leeds, floor and wall tiling; J. F. Phillips and Sons, London, heating installation; T. Story and Co., Ltd., Leeds, domestic hot water supply; W. Walsh and Sons, Leeds, painting; Eaton and Frain, Leeds, petrol-gas installation; T. H. Johnson, Leeds, laundry and drying apparatus; J. T. Hymas, Burton Leonard, water supply and reservoir.

The heating installation is by an accelerated system of low pressure hot water, and the contract was carried out under the supervision of the Leeds branch of Messrs. J. F. Phillips and Son, heating specialists,



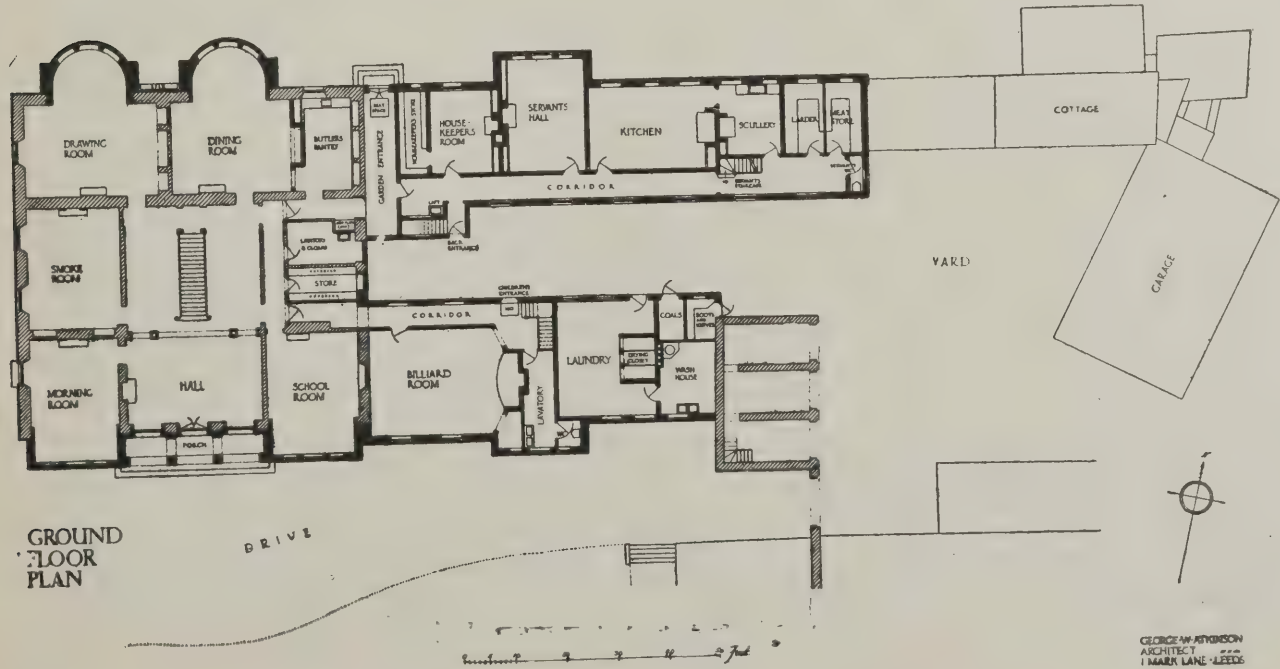
GARDEN FRONT.



HOLLINS HALL - RIPLEY
YORKSHIRE

of 21, Old Queen Street, Westminster. The piping scheme in small-bore tubes has been arranged in such a way that no pipe is anywhere conspicuous, and the majority of the radiators are fixed within window recesses forming window seats, where they are also concealed. Fresh air inlets are provided behind the radiators. The boiler, which is cast-iron sectional, burns anthracite as fuel, and maintains the whole installation at an even temperature for about twelve hours without attention. The whole apparatus is automatic in its action.

The old house was cement-plaster coursed in imitation stone work, and the whole of the house is now rough-cast with stone dressings. The old portion of the house is shown on the plan with the walls hatched in, and the new portion with the walls blacked in.



GEORGE W. ATKINSON, ARCHITECT.

SPECIFICATIONS FOR PAINT.

BY ARTHUR SEYMOUR JENNINGS.

Very few specifications for the erection of even large and important structures are sufficiently explicit in the clauses which relate to painting. It is true that we have gone a little beyond the old-time practice of specifying for "and oils," etc., and nowadays usually have some direct reference to the kind of white lead, colours, etc., to be used; but there is still left much to be desired in specification writing in this section of the finished building. Below are a few notes as to materials which may assist in specifying the paint to be used and the details of application:

(1) WHITE LEAD.—State whether Stack or other process, such as "Purex" (sublimed), "Brimdown" (wet process), "chamber," etc. English ground and corroded. Note: A foreign lead may be ground in England. Sample should be deposited to ensure fineness and whiteness. "Genuine" is sufficient to indicate purity, as it rarely happens that adulterated lead is sold as genuine. Inferior grades are invariably marked either "Reduced," or "No. 1," "No. 2," etc.

ZINC WHITE.—A correspondent recently asked this question. "A specification commonly adopted is as follows: 'Painting on woodwork to be executed with colour mixed from genuine white lead, pure linseed oil, and pure turps, and to be finished approved tints.' "How," he asks, "can this best be altered to allow the use of oxide of zinc, either in conjunction with white lead or instead of it?" The answer is that it would only be necessary to sub-

stitute "genuine zinc oxide" for "genuine white lead," or to mention the proportions of each pigment that are to be employed, but is very important to add that the two pigments in the proportion given (say two of lead to one of zinc, or 50 per cent. of each) be ground together. If they are merely mixed together in the painter's pot they will yield a very different paint from one made of precisely the same materials ground together and intimately mixed by the paint-maker, not the painter. In passing, it may be mentioned that one of the most durable white paints it is possible to make (it may be coloured if desired) is a mixture of white lead and zinc oxide. The lead gives the body and retains the advantage of going smoothly under the brush, while in actual service it checks the tendency of the zinc to crack. On the other hand the zinc gives increased whiteness, it prevents "chalking" of the lead, and it lessens the liability to change colour in the presence of sulphuretted hydrogen. The writer used such a paint many years ago, and found it to be most durable, although, of course, the surface was alternately wet and dry, a condition which is very severe on any paint.

It cannot too often be repeated that in specifying zinc oxide that term should be used and not "zinc white," as the latter term is often applied to lithopone, an excellent pigment in its way, but one of a totally different character. Zinc oxide is not often adulterated in the ordinary sense, but one variety which comes from the Continent contains an appreciable amount of lead, which occurs in the ore from which it is made. It is advisable therefore to specify "Genuine zinc oxide,

free from lead." Do not add "and other adulteration," as the maker or dealer might easily claim that as the lead occurred naturally it could not possibly be regarded as an adulteration, although possibly it might not be quite pure.

Another point well worth remembering in writing this part of a specification is as to the use of the word "paint," and one should be very careful in regard to it. To give an example: "Genuine white lead" means pure hydro-carbonate of white lead, but "Genuine white-lead paint" may mean practically anything, provided that the genuine lead predominates in quantity over other materials—that is to say, rather more than 50 per cent. is lead. "Prussian blue paint" may consist of any white base tinted with Prussian blue.

The following clause is suggested as covering the subject: "All woodwork is to be carefully painted with — coats of paint made from genuine green seal oxide of zinc free from lead and other impurities, and mixed with pure turpentine colours and the best zinc driers, the linseed oil to be pure and the turps genuine American turpentine." It should be observed that green seal is the best and whitest quality of zinc.

As no doubt most readers will be aware, white oxide is made simply by burning metal zinc or spelter in furnaces, which causes the zinc to volatilize and pass off as vapour. This on cooling takes the form of pure zinc oxide, which is collected in bags extending a considerable distance from the discharging point. The finest and best oxide is carried the farthest, and is sold as green seal. Another grade



HOLLINS HALL, RIPLEY: ENTRANCE PORCH. GEORGE W. ATKINSON, ARCHITECT.



HOLLINS HALL, RIPLEY: HALL AND STAIRCASE.

GEORGE W. ATKINSON, ARCHITECT.

obtained from a point nearer the discharge is sold as red seal, and there is a third or grey variety which is but little used in this country, although it is largely employed on the Continent, particularly for iron work. There are also grades between the green seal and the red seal. The above is the method used for the production of the best zinc oxide. Another process is to obtain the material direct from the ore. This usually results in some lead being present as already mentioned—a grave defect.

COLOURS.—It will be noticed that in the above suggested clause the word "tube" has been inserted. The reason is this: Often colours used by painters are of a very inferior grade, and yield poor muddy tints. It is quite useless to specify that all colours shall be "pure" or "of the best quality." With a few exceptions there is no such thing as a pure colour. For example, a lake could not be made without barytes, gypsum or some such base, neither could a Brunswick green be made without a similar base, and one might give many instances of the kind. "The best quality" as applied to tinting colours would mean literally artists' colours, which, of course, are far too good and expensive for use by the house painter. Now, as a matter of fact, colours which are put up in collapsible tubes are invariably of good quality. Doubtless some are better than others, but all are good, hence the safeguard of using the word "tube" in a specification. The architect who acts on this advice for the first time is almost sure to be told by his painter and decorator that to use tube colours will add consider-

ably to the cost. If this takes place it will be quite safe to contradict the worthy man point blank. It is time that tube colours, bulk for bulk, cost more than those put up in kegs or cans, but the saving of waste and the greater tinting strength of the colour render them actually more economical. Painters are a very conservative class, but many prominent firms use no other colours than those put up in tubes.

RUBBING DOWN.—It is a little curious to observe that reference to this most important point of a painter's work is usually omitted from a specification, yet the degree of thoroughness with which it is done determines to a great extent the beauty of the finished work. "Thoroughly rub down to a level surface prior to repainting and between each coat of paint with No. 1 sand paper (a medium grade) all painted work, etc.," or "with fine steel wool" or—and this will apply to all fine work—"fine powdered pumice stone and water, taking care to thoroughly wash off all grit before applying the next coat."

LINSEED OIL.—Merely to specify that this is pure is sufficient. Adulteration is detected without much difficulty, although to find out what the adulterant consists of is not so easy. Specify whether boiled or raw oil is to be used, remembering that raw oil has a tendency to bleach, and should therefore be used for white or light tints, while boiled oil darkens on exposure.

TURPENTINE.—"Genuine American turpentine" is the usual formula, but as that product is so very high in price it may be deemed advisable to specify a good substitute, known as "white spirit." There

are several grades of these substitutes on the market, and if the best is specified a considerable saving may be effected without in any way injuring the paint. It is very advisable to mention the makers' name.

VARNISH.—There, again, the word "best" means nothing. Give the price per gallon, and give makers' name. Sometimes the clause is added "or other approved varnish of equal quality."

DRIERS.—More trouble arises in paint from the abuse of driers than any other cause. Workmen who have been accustomed to an inferior grade of paste or patent driers will use an excess. If first-class liquid driers are specified—all varnish manufacturers make them—the quantity can be accurately measured.

ARCHITECTURAL COPYRIGHT.]

The Copyright Bill has proceeded more rapidly at recent sittings of the Grand Committee of the House of Commons than it did when the opening clauses were under discussion. Clause 19 has now been reached. Clause 9, containing the restriction on remedies in the case of architecture, has remained practically unaltered.

The clause reads:—"Where the construction of a building or other structure which infringes or which, if completed, would infringe the copyright in some other work, has been commenced, the owner of the copyright shall not be entitled to obtain an injunction or interdict to restrain the construction of such building or structure or to order its demolition."

AN ARCHITECT'S VIEW OF
GERMAN TOWN PLANNING.

BY W. H. SETH-SMITH, F.R.I.B.A.

THERE is a strong conviction in the British mind that while individual freedom is everything to us, in Germany the individual is ruthlessly sacrificed to the community.

A fortnight in the latter country in close touch with so many leading minds, especially those dealing with the problems which intimately affect the subject of individualism versus co-operation, is sufficient to dissipate this British prejudice. True we found everywhere the democratic principle that where the rights of the individual traversed the needs of the many the former must give way. The community must not be sacrificed, as they unquestionably have been too much in England, to the individual. Wherever possible, however, individual ownership is respected and rights of property are safeguarded quite as jealously as in England.

A very important difference between the German system and our own is that those responsible for civic government are invariably well-trained, experienced men, and, since honorary representative administration cannot be fully responsible, the principal executive officers, namely, the Mayor and chairmen of the Committees, are adequately remunerated and a reasonably permanent tenure of office is secured to them.

It is not too much to say that little progress in Town Planning can be looked for in England unless and until we adopt a more enlightened municipal constitution and regulations. Another principle vitally affecting housing and town planning in Germany is their system of direct municipal taxation. The operative and domestic servant, as well as the larger householder, has directly to pay his or her fair share of the cost of the necessities and amenities of local government, which is based on every income exceeding £45. The income tax is levied by the Municipal Authority, and rises from about 1 per cent. on say £50, to 4 per cent. on £5,000 and over; and the municipal taxes amount to about 140 per cent. more than the income tax. No basis therefore exists for comparing German and English municipal taxation; but however heavy German rates may be, citizens of every class are thus educated to value to the full all the advantages they derive, since they know the cost.

Everywhere in Germany ancient æsthetic character in a town is recognised as a most valuable civic asset, and is jealously conserved. In some towns honorary committees of taste have been appointed by the authorities to give the citizens confidence in the preservation of the ancient character of their town. These committees are mostly composed of architects of standing, but in Nuremberg it consists of architects, painters, and sculptors: a dubious experiment, the effect of which, however, cannot be known for some time to come since it is only twelve months old. We were informed that all designs, both as to plan and elevation for new buildings within certain areas, must come before this committee, who, if they disapprove the drawings and fail to obtain a better design from the promoter, provide the plans and even elevations gratis! Doubtless the reason for this lies in the fact that the status of an architect is not so good in Germany as in England, and that builders

are more often employed in this capacity, even for important street fronts. Building societies and speculating builders have not yet realised, as they are rapidly doing in England, that it pays in all ways to employ well-qualified architects to design their building projects. German architects are, however, combining generally for the purposes of defence and better training, so that we may soon see this state of things altered and architects employed more generally.

As we all know, modern requirements, immediate and prospective, are provided for in Germany by means of Housing and Town Planning schemes of a bold and far-seeing character facilitated by State and local enactments, with the result that improvements are not hampered at every step as in England.

I leave it to those of our party whose province it more especially is to record our interesting observations on housing problems, such as the comparative value of land, the cost of building, accommodation, rents charged, taxation, regulations as to heights of buildings in the various zones into which town suburbs are generally divided, widths of streets and roads in workmen's villages, etc., etc. The aim of our expedition was to ascertain at first hand the principles on which all such matters are being worked out on this part of the Continent.

As regards the architectural aspect of the question, on which I am asked to supply a few notes, it may not be amiss first and briefly to review recent art history in Germany.

In literature, painting, and sculpture there has been for the past fifteen years or so in Germany, as elsewhere, a steady rising movement known as "secessionist" against purely traditional and conventional rules of art. Sudermann and Hauptmann, the dramatists and poets, led the way, and the painters, headed by Arnold Böcklin, followed. The art of Architecture has, of course, been equally affected by a movement which, notwithstanding its vagaries, is followed by a large number of scholars and eminent painters, sculptors, architects, and decorators, much of whose work, both in conception and execution, is excellent.

In Germany there are schools connected with many of the Universities in which the best practising architects of the day are the professors of architecture, and among them are apostles of the secession. For example, in the course of our short tour we saw a new church just completed in Ulm, where every feature exhibits an impatience with academic design, a thoughtful optimism, and courage in the adoption of new forms suited for new materials such as ferro-concrete, and where the treatment both as to design and texture of surface is in a fresh and characteristic style. The same influence was evident everywhere. It is not too much to say that all the architects we met, practising officially or independently, expressed, both in their work and in their conversation, their adhesion to the secessionist ideal of thoughtful and free design, while emphatically lamenting and condemning its abuses. Many buildings we saw showed the merits of this new school of thought.

We noted several blocks of shop property at Düsseldorf. The most notable is Tietze's great stores. This building is worth going a long way to study. It is a beautiful design and a work of great architectural originality, and very suggestive as to the best method of getting large areas of shops and showroom windows without attempting to support a universe on a lucifer match.

The strong vertical lines carried boldly through all the storeys are very picturesque; in short, one has here a happy combination of Gothic and Renaissance principles, resulting in the dignity and refinement required in street architecture. The spirit this building exhibits reminds one of Wren's ideal, viz., the retention of the picturesqueness of skyline, which is so characteristic of mediæval work, while conforming to the more symmetrical lines demanded of modern architecture.

The centre of this free art movement is Munich, which has the best school of architecture in Germany. That the capital of Bavaria should lead in art is only what might be expected, since South Germany has always shown a more artistic temperament in her people than has the North.

Cologne, both as to ancient and modern work, is most interesting, and equally interesting is the contrast of policy on the part of the civic authority in dealing in a conservative spirit with the city *within* the ancient walls and adopting a progressive policy as touching town extension. As an instance of the former, they have retained the ancient houses and shops hugging most of the old churches, excepting the cathedral, the precincts of which have been cleared as a protection from risk of fire and to enable the noble pile to be seen. This was the more necessary for the reason that the lay-out of the old city gave no vista-views of the building. Not that the authorities preclude modernism in the design of new buildings within the old city. On the contrary, several commercial buildings within a stone's throw of the cathedral are as characteristic of the secessionist school as any of the houses we met with. Some new warehouses on the banks of the Rhine show how well utilitarian ends can be obtained without sacrifice of beauty even where ferro-concrete is adopted. Many of the houses of a better class without the walls were also excellent architecturally.

In Frankfurt and Stuttgart there appeared to be less of this advanced work, but in both these places and at Ulm the new work to the Town Halls was carefully studied and much appreciated.

Rotenburg on the Tauber, with its perfect mediæval walls and many towers on those walls, has been the theme of all architects and painters who have seen it. I have seen nothing to compare with it in architectural beauty in Germany. Aigue-morte and Carcassonne in South France may equal it in archæological interest, but not in picturesqueness. Besides exhibiting great skill and taste in town planning, there is not a single discordant note struck in the architectural composition of this wonderful place. Even Nuremberg suffers severely in comparison, and should be visited before and not after Rotenburg. In analysing the causes of the harmony of effect noticeable everywhere one is impressed with the great part played by a uniformity of shape and colour of the roofing tiles and of the stucco treatment of the walls, combined with great variety in roof-lines such as the alternation and grouping of gables and flat eaves.

Of the other towns, Stuttgart is beyond doubt the most beautiful, immediately surrounded as it is by hills, seven or eight hundred feet high, clad at the top, and for many miles round the town, with forests partly owned by the Corporation and partly by the State and accessible for its 280,000 inhabitants from the centre of the town in fifteen minutes. So much valued

are the steep slopes of these hills towards the town that as a feature of town management the lower side of the cincture roads are not allowed to become building sites. The conservative policy is rigidly maintained in the ancient town, which is very picturesque. Those parts of which were beyond repair have been rebuilt, reproduced as nearly as may be.

The reaction against academic architecture, whatever its influence may be on monumental architecture, is certainly conducive to the simple and unaffected treatment of the dwellings of the poorer classes. In France the exclusive teaching of Renaissance in the schools has had a most disastrous effect on the small house, but we were glad to see in Germany a growing tendency to design modern cottages and workmen's flats with all the breadth and simplicity the old ones show. If we except Messrs. Krupp's later housing schemes and one or two elsewhere, we may safely say that nowhere did we see colonies of small houses which display architectural treatment at all to be compared in merit with the Hampstead Garden Suburb, though it is only fair to add that there was in nearly all cases a striving after this ideal of simplicity and breadth, and the result of the effort in a few cottages or blocks compared favourably with the average Hampstead design. Krupp's various villages may be said to illustrate the history of the housing movement from first to last in Germany, both as to lay-out and in elevational design, as well as in accommodation. It is interesting to see, as we did, how far this lead has been followed all through the districts covered by our visit.

There is no question, however, as to the German cottage being better built than our own. This is largely due to the comparative severity of the German winter, which not only demands thicker walls, but, in Southern Germany, double windows also. Other differences between their cottages and ours are smaller gardens, a washhouse in the basement and a drying room in the roof. Their small smoke flues produce insignificant chimney stacks, but their common use of external wood shutters, often pierced with a circle or oval, lends the house a more homely and pretty appearance.

An experiment, which we were assured has so far been successful, has lately been made at Essen to heat all the cottage rooms, other than the kitchen, by hot air tubes, utilizing the waste heat from that fire, and, of course, controllable in the summer. Everywhere transomed windows are used, for the reason that in winter it is almost impossible to open the lower casement. This necessity complicates the elevational design.

Experience as to the value of the land had compelled reforms in Germany, as here, to revert to the system of two or three storeyed blocks of dwellings in place of the ideal cottage. The streets of workmen's colonies are almost invariably narrow. It is found that about twenty-five feet from centre to centre of the pavement is sufficient.

This extremely important point is well illustrated at Hampstead Garden Suburb, where, to obviate the fatal building by-laws, a special Act of Parliament was obtained to enable the Trust to economise

land and money in this manner. It is, however, perfectly intelligible that the Local Government Board should be shy of relaxing the building by-laws until the local authorities have a Town Planning scheme defining the future main thoroughfares.

Very often in the suburban villages the streets, and even footways, are left unpaved and unkerbed. Very rarely did we find in these villages anything but wood fences about four feet high on the road boundary of the plots, and one is struck by the great detriment these are to the artistic appearance of the street, especially as white is the favourite paint for them. A comparison between these fences and the Hampstead hedges is highly instructive.

Bavaria is the land of stucco facings. Everywhere from mediæval times to our own we see this material, used over rubble dressed with free stone, even in the public buildings. This stucco work is doubtless the prototype of the almost universal rough-cast as applied to middle-class and workers' dwellings, and nothing we saw looked half so well when broadly used in combination with red tiled roofs. The red pan-tile prevails for economical reasons as well as for its waterproof qualities. The changes are rung on the Bridgewater type as well as on the oblong "common" tile, generally 16 in. by 6 in., with rounded ends and long lap in imitation of the very beautiful Rotenburg old roofs, where this form is universal and incomparable in effect.

The memory of the courtesy, hospitality, and devotion to our ambitions on the part of the Town Authorities and their architects will be ineffaceable.



Architectural adornment is a strong characteristic of the Berlin bridges, and this comparatively recent example carries on the tradition.

CHARLOTTENBURGER BRIDGE, BERLIN

BLINDS ON ARCHITECTURAL
LINES.

BY D. McINTOSH MITCHELL.

At the slightest suspicion of sunshine all the large drapery and dry goods establishments run out their shop blinds; and a close inspection shows clearly that only a very few have been fixed up with a view to pleasing the eye; most of them giving the impression of an unavoidable necessity, which, willy-nilly, had to be complied with, and therefore it naturally, but not inevitably, follows that the execution of the work leaves much to wish for.

So little attention has been given to the designing of blinds that the expression of a few general ideas on the subject will probably be useful.

The chief object in fixing a daylight blind to a private residence is to keep the rooms cool and free from glare. This object is attained by keeping the rays of the sun as far away as possible from the surface they shine upon. This consideration ought to be the basis of construction for any blind for a private house; but, looking at the common types of blinds, it will be immediately observed that this principle is generally neglected. A blind which apparently solves the problem is one in which the hood-shaped form of the blind decidedly keeps the rays of the sun at the utmost distance from the window. The blind, when down, lets enough air and light into the room to make it healthy and agreeable. Blind-makers commonly aim at making the blind as inconspicuous as possible, architects naturally objecting to blinds that disfigure or conceal the building. It is obvious that the blind-maker should make it his aim to comply with the demands of architecture in furnishing a house with blinds. The inventor of the blind mentioned is careful to adapt his blind-box to the ruling lines of the building, and the blind-box entirely covers the blind, at once concealing it and protecting it when it is drawn up. It is further taken into consideration that when the blind is let down it should decorate rather than disfigure the building, and this idea of conformity is further pursued in producing a special blind for bay and corner windows of any shape. The blind is moved either by cords or by a patent moving mechanism, the latter enabling the construction of a blind of any desired length to cover balconies, doorways, etc., providing the throw-out is not more than 15 ft.

The construction of shop-blinds is obviously ruled by principles or details differing slightly from those of blinds for private residences. Shop blinds have to be moved and handled easily, must have a certain throw-out to enable spectators to look at the goods exhibited in the windows, and be of a sufficient height from the pavement not to cause an obstruction, and must not darken the window. The necessity for easy handling and moving of the blinds suggested the invention of the spring-roller blind: but larger shop fronts, and provision of the utmost scope for the effective display of goods, rule the architecture of modern stores, and all designs have to be modified accordingly. Naturally, all accessories have to answer the requirements of the architecture, and with the notable exception of the ordinary shop blinds, they conform to this canon. It became necessary, therefore, to devise a system of roller which can be made longer than the spring roller, and accordingly the mechanism under notice has been devised. It consists of bevelled wheels, ball joints, etc.; and by this means it is now possible to make a blind 150 ft.

long, which can be as easily moved as a short blind. Moreover, a blind thus fitted can be kept in any desired position, by means of support arms and throw-out arms running on slides. The tick is evenly rolled up on the roller, which acts almost like a mangle, and serves to preserve and prolong the service of the tick. Such a blind has a uniform appearance with an entire absence of overlappings.

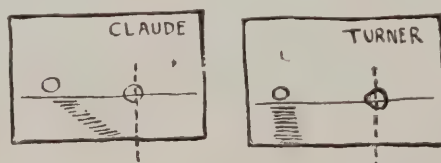
The prescribed height from the foot-path, and the distance of projection of the blinds, are necessarily observed by the blind-makers, who, however, usually pay too little attention to the very important matter of excessive obscuration. A common fault is that the rays of light which are let through by the tick reflect on the glass of the window, turning it into a mirror, so that almost every blind can be distinctly seen in the window it protects, with the natural effect of rendering the shop dark and obscuring the exhibits. This problem has been very ingeniously solved by means of a new patent non-reflecting tick—a strong, light-proof and waterproof fabric, which prevents the reflection of the rays by distributing them in such a manner that they are compelled to find their way through the window.

Although so much is being written and said about city planning and the æsthetic amelioration of existing streets, it seems hitherto to have occurred to no one to draw attention to the atrociously ugly effect produced in important shopping centres when the various shaped blinds of the stores are down. Yet such a street could be easily made pleasing (or at least inoffensive) to the eye by insisting that these blinds should conform to some well-considered system, superintended by a properly constituted authority. The point seems to be well worth attention, considering how easily an array of blinds may make or mar the vista of an important street.

CORRESPONDENCE.

*The Sphere in Perspective.*To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—I thoroughly appreciate your lucid explanations of the sphere seen in perspective; but if every part of a drawing were to be kept well within the cone of visual rays, corrections would be unnecessary: circles might be shown as true circles, straight lines truly straight, and ellipses truly horizontal, although as a matter of fact all lines not passing directly through the centre of the retina are portions of great hyperbolas, and should be subject to the same corrections as spheres and bowls. I remember an Academy picture (I think by Sir L. Alma-Tadema) which had a large open bath or bowl in the extreme right-hand lower corner, correctly projected in perspective with the major axis of the ellipse tilted! The appearance was most distressing, as the eye demanded the axis to be parallel with the boundary line of the picture. Another instance where perspective truth appears to be error, in which Claude sinned and Turner did not, is that of depicting reflections in water as coming to the feet of the observer instead of as vertical lines. For instance, if the



sun is setting on the left and the point of sight is towards the right, the respective treatments of the reflection would be as shown in the accompanying rough sketches.

Southsea.

R. F. CHISHOLM.

*Coronation Seats.*To the Editor of THE ARCHITECTS' AND
BUILDERS' JOURNAL.

SIR,—May I trespass upon your space in order to correct any misapprehension which might arise from the article in your issue of 14th instant.

No mention is made therein of sections 138 and 145 of the London Building Act, 1894, under which these structures are subject to the supervision of the District Surveyor, upon whom notice must be served before commencement, by the builder or person causing or directing the work. The decision in the High Court case of Westminster City Council v. Watson and others in 1902 makes this point quite clear.

There appears also to be a widespread impression that stands erected for private use and not for letting are not subject to supervision. I need hardly say that the Act makes no such distinction.

C. W. SURREY,
District Surveyor,

City of London, West.

THE ARCHITECTURAL ASSOCIATION

Visit to "Nashdown," near Taplow.

The first summer visit of the Architectural Association took place on June 10th, when "Nashdown," near Taplow, the residence of Her Highness Princess Alexis Dolgourouki, designed by Mr. E. L. Luyens, was visited by a large party. The first glimpse obtained through the trees gives the impression of an old Georgian house, with whitewashed walls, roofs of old tiles, chimney stack of red brick, and window shutters of a cool green shade.

The entrance front is at right angles to the main road, in a little by-road. A small whitewashed garden house, with a pyramid roof, marks the junction of the two roads, and is connected with the main building by a high wall; higher up the road is an interesting little group of buildings comprising the stables and cottages. The entrance to the stable yard is flanked by large Tuscan columns. A colonnaded loggia is the central feature of the house itself. In the centre of this, through a wrought-iron gate, a charming little circular ended court is seen. This court practically bisects the building. On the left, under the loggia, a broad flight of steps gives access, through the entrance doors, to the Big Room, which is two storeys high, running the whole depth of the building, from north to south, with an eastern extension which contains a billiard table. A music gallery is placed over the entrance.

From the Big Room, on the south side of the house, we get in succession a small circular drawing room, winter garden (two storeys in height with top light), dining and smoking rooms. A broad flight of steps leads to a spacious landing on the first floor. The landing walls are panelled, and a panel in the overmantel contains a quaintly drawn and richly coloured map of the district, with a wind gauge set in the centre.

A splendid effect is gained by the broad and low proportioned corridors on the first and second floors. The treatment of the windows at the end of the corridors looking into the central court is particularly clever. Most of the bedrooms are planned

with a recessed space for the bed, in some cases the bed seems almost in another room, an idea not approved by the majority of English people.

Servants' bedrooms, kitchen and offices are all on the lower ground floor.

The south front has the Dolgourouki arms in the centre, with two large segmental bays on either side. On the extreme east outside billiard recess is a small loggia. A high wall connects this with the circular rose garden and pergola. Beyond are the stables. On the extreme west of this front a terrace wall, with steps at either end, leads down to tennis and croquet lawns. Forming these gardens on the west front has been no small undertaking, owing to the variation in levels.

Leeds and Yorkshire Architectural Society

The Green Book of this Association, which has just been issued, contains full particulars of a year's transactions, lists of officers and members and of past presidents, from Mr. George Corson (1876-7) to Mr. Sydney D. Kitson, the present president, whose admirable address, delivered last November, is usefully included in the book. In the report of the Council (April 1st, 1910, to March 31st, 1911) it is stated that the total membership on the latter date was 183—namely, 32 honorary members, 72 members, and 79 associates—a net increase of 17 on the previous year's showing. In a summary of the year's proceedings, it is stated that the reading by Mr. E. H. Gibson of his prize essay on "Ferro-Concrete" "led up to a heated discussion on the subject." Why "heated"? And how was the temperature gauged?

Manchester Society of Architects.

The luxuriantly wooded country of North Cheshire is extraordinarily rich in domestic architecture of that prolific timber-building time, the 15th and 16th centuries, and has also some interesting examples of a vernacular of church building all its own, of the same period. Fine as the half-timbered halls are, the later Georgian halls, of which there are not a few, vie with them in interest, and often surpass them in real architectural qualities.

During two visits made last week by the Manchester Society of Architects, each type has, as it were, undergone review. On the Tuesday Wimslow was visited. The church has a typical Cheshire tower, and the interior possesses a dignity which seems due largely to the simplicity of the stonework and to the ranges of square-headed windows with their deep internal splay, as well as to the stoniness of the rood screen by Bodley; this, and the rich old roof, contrast finely with the crude stonework. Hawthorn Hall, with its multitude of gables and its quaint octagonal turret on the roof, makes a striking group, and some good Georgian panelling and a fine staircase were found inside.

Of Adlington Hall, which also was visited, the older half-timbered portion, forming two sides of the main quadrangle, contains the great hall, with its splendid open timber roof, its huge mullioned windows, and the beautiful 18th century organ upon which Handel performed. The organ-case and gallery are of exquisite workmanship and design. The latter Georgian wing, a vast addition made in 1741, has all the breadth and symmetry of its period; but though the handling of the masses is clever, there is a touch of awkwardness that suggests an amateur rather than a master hand; but even the



BERRYDOWN COURT, OVERTON, HANTS. E. L. LUTYENS, F.R.I.B.A., ARCHITECT.

stirling of the columns of the great portico in a manner which ruins their proportions is to some extent compensated for by the beauty of the colouring, and the smaller stable building, as a piece of formal architectural composition, surpasses the more ambitious hall. J.T.H.

ACQUISITIONS FOR THE VICTORIA AND ALBERT MUSEUM.

The following recent acquisitions have now been placed on exhibition in the Department of Engraving, Illustration, and Design:—A series of working proofs of aquatint engravings, "Sunrise o'er Whitby Scaur," "Bosham," "The Curfew, Rye," and "Sea-piece, after J. M. W. Turner, R.A.," given by the artist, Sir Frank Short, R.A., P.R.E., to illustrate the technique of the process (Room 70). A series of six working proofs of a colour aquatint, "Kensington Gardens," by Mr. E. L. Laurenson, given by the artist; and three proofs of the new book-plates etched by Mr. G. W. Eve, for the Royal Library at Windsor; given (with the King's permission) by the artist (Room 70). Working proof of the mezzotint after "The Huguenots," by Sir J. E. Millais, Bart., R.A.; and etched state of the mezzotint portrait of Sir William Sterndale Bennett, after the same painter; both by the late T. O. Barlow, R.A., and given by the Misses Barlow (Room 70). Eight litho-

graphs by Mr. Joseph Pennell, of buildings, factories, etc., in New York and Niagara; and six colour-lithographs by Professor Carlos Grethe (of which three were given by him) (Room 70). Two tinted pen-drawings by Constantin Guys; a drawing, "Summer," by James Ward, R.A., being a study for a subject afterwards engraved by William Ward, given by Mr. A. E. Anderson; and four sheets of studies of cats, hands, etc., by the late E. J. Gregory, R.A., given by Mr. Harold Hartley (Room 70).

On the staircase leading to Room 65 has been placed a very fine Chinese painting, of quite unusual size and decorative quality, representing birds of paradise and storks in a grove of bamboo, roses and other plants. This has the signature Tei-ki, and is dated 10th month 1st year of Che Shun, Horse Year (A.D. 1330). It was presented to the Museum by a donor who wishes to remain anonymous. In Room 65 a good Japanese painting of a pheasant (early 19th century); one of a willow-wren on a pine-branch, by the living artist Watanabe Seitei; and two original drawings by Kyosai, have also been placed.

Additions have been made to the exhibition of illustrations of British stained glass, in Room 71, of drawings and tracings of glass at York, by Mr. Laurence B. Saint; and, to that of designs for textiles, in Room 72, of a series of original designs for Lyons silks of the Louis XVIII. epoch.



FONT COVER IN ST. STEPHEN'S CHURCH, BIRMINGHAM. W. H. BIDLAKE, M.A., ARCHITECT.

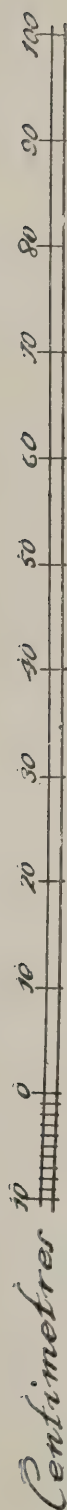
! (Particulars on page 685.)

S. STEPHEN'S.
Birmingham.

FONT COVER

W. H. Bidlake MA
Architect

Centimetres



A vertical scale bar with markings from 0 to 100 in increments of 10. The label 'Centimetres' is written vertically to the left of the scale.



Inches



A vertical scale bar with markings at 0, 12, and 24. The label 'Inches' is written vertically to the left of the scale.

Half Plan.

“CENTRE OF PRESSURE” IN MASONRY JOINTS.

BY F. E. DRURY.

In some important structures, it is necessary that no tension shall occur in any joint, or at any horizontal section. Tables of the position of the “centre of pressure” are given in many text books, and the object of this article is to show how this position may be proved for the ordinary cross-section of masonry structures.

By the “centre of pressure” is meant that point (or line) through which the “resultant of all the external forces” passes. It is also called the “centre of resistance,” or “position of resultant pressure.”

The position of the “centre of pressure” will be here considered as a deviation from the neutral axis of the section.

Suppose the structure to be symmetrical (built vertically or with equal batter on each face), and free from any disturbing forces, then the load on the base joint will be its own weight, W. Let A=area of base, then the intensity of compression due to the structure alone is

Weight/Area = W/A

It is clear that before any tension can exist in the bed joint, the compression already existing must be neutralised, therefore the maximum allowable reduction of compressional stress=W/A. The position

of the resultant pressure is therefore dependent on this condition, and its extreme deviation from the neutral axis governed thereby.

Let a rectangular wall be subjected to a disturbing pressure, such as wind, earth, or water, which would produce a bending moment on the structure as in Fig. 1.

Let M_p=moment of pressure
=(in this case) P x h/2.

This is the measure of the overturning tendency. It is opposed by the “moment of resistance” of the cross-section. Call this M_R. Now M_R for any section

= I/y f_o

Where I is the moment of inertia about the neutral axis, Y=the distance of the extreme elements of sectional area from the neutral axis and f_o=the intensity of stress on these extreme elemental areas.

Before equating these, refer to Fig. 1, which shows the weight of wall, W (acting through its centre of gravity), and the

disturbing force, P, compounded to obtain the resultant force, R. R is the diagonal of the parallelogram of forces a b c d. Its area represents the moment of P, v.z.: -P h/2. Call the base “a b” of

of the parallelogram x, then Wx, also represents its area. Again, R is the diagonal, d is its perpendicular distance from the neutral axis, and, from geometrical considerations, Rd=area of parallelogram. Hence we can say that

P h/2 = Wx = Rd = M_R.

and in our deductions we can use the most convenient of these values of the overturning moment.

Notice that W is the vertical component of R. We could further show that however R comes to exist, the overturning moment=Rd or Wx, where W=vertical component of R and x=the horizontal deviation of R from the axis of the joint. And this form is most convenient for use in practice. See Fig. 2.

Returning to the consideration of Fig. 1, we have shown that

M_p=Wx and M_R= I/y f_o.

so far as resistance to bending is concerned, we have

Wx = I/y f_o.

But the greatest stress (f_o) that may be developed is W/A. Insert this in the above, and we have

Wx = I/y * W/A
∴ x = I/Ay

Let t=thickness of wall and l=length, then

I = 1/12 l t³
y = t/2, and A=l t.
∴ x = (1/12 l t³) / (l t * t/2) = t/6

That is to say, from whichever side the pressure P is exerted, the maximum deviation x is t/6 on either side of the centre.

Hence the rule, that the resultant must fall within the centre third of the joint if tension is to be avoided. Fig. 3 shows the distribution of stress when x=t/6.

But this deviation applies only to solid rectangles, and “x” varies with the form of cross-section. The values of x for some common forms are as follows:—

Solid circular pillar or column (Figs. 4 and 5). Equating as before.

Wx = I/y f_o.

But

f_o = W/A
∴ x = I/Ay
I = π r⁴ / 4
y = r
A = π r²
= π r⁴ / 4 r² = π r² / 4
∴ x = r/4 or d/8

Hollow Circular Structure (as tall chimney), Figs. 6 and 7.

As before

x = I/Ay

But

I = π (R⁴ - r⁴) / 4
y = R
A = π (R² - r²)
= π (R⁴ - r⁴) / 4 R
x = (π (R⁴ - r⁴) / 4) / (π (R² - r²) R)
= (R⁴ - r⁴) / (4 R (R² - r²))
= (R² + r²) / 4 R

Here the exact value depends on the ratio of thickness to diameter (or radius).

Suppose diameter 10ft., thickness 1ft. 6in. Then R=5ft., r=3ft. 6in. or .7R and

x = (R² + (.7R)²) / 4 R = 1.49 R² / 4 R = .37 R or .185 D

Hollow Square or Rectangle (chimney stack). For latter, consider least dimension as D, see Figs. 8 and 9.

As before

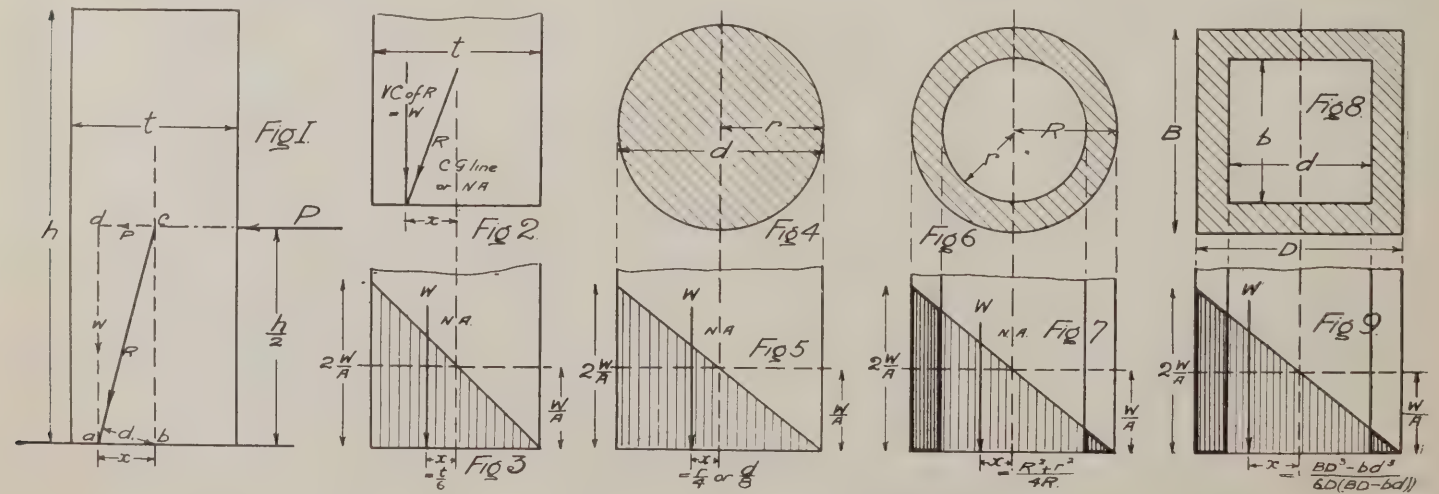
x = I/Ay

But

I = 1/12 (BD³ - bd³)
y = D/2
A = BD - bd
∴ x = (1/12 (BD³ - bd³)) / ((BD - bd) D/2)
= (BD³ - bd³) / 6D (BD - bd)

Insert values for any particular case.

Square Chimney. For example, let



$$D=S^1. \quad B=S^1. \\ d=6^1. \quad b=6^1.$$

Then

$$\begin{aligned} d &= .75D \text{ and } b = .75B. \\ \therefore x &= \frac{BD^3 - .75B(.75D)^3}{6D(BD - .75B - .75D)} \\ &= \frac{BD^3(1 - .75^3)}{6BD^2(1 - .75^2)} \\ &= \frac{D}{6}(1 + .75^2) \\ &= .26D \text{ (approximately } \frac{1}{4}D). \end{aligned}$$

For "square" sections then, by the above deductions, let $K = \text{the ratio of } d \text{ to } D = \frac{d}{D}$, and inserting this in the formula we have

$$x = \frac{D}{6}(1 + k^2).$$

NEWS ITEMS.

Whitby Memorial to Captain Cook.

Whitby is to have, in memory of Captain Cook, a replica of the statue to be erected in London. Mr. John Tweed, who is preparing the Clive Memorial for India, has been appointed to execute the work, which will not be completed for nearly eighteen months.

Architectural Association Awards.

The list of awards for the session 1910-11 of the Architectural Association is as follows:—A.A. Silver Medal, Mr. G. W. Home; hon. mention, Mr. H. A. Ross; Architectural Union Company's Prize, Mr. C. F. Butt; Banister Fletcher Bursary, Mr. T. F. H. White; A.A. Essay Prize, not awarded.

Cancer Hospital Research Institute.

The new Research Institute of the Cancer Hospital in Fulham Road was opened by the Duke of Connaught on May 23rd. This building, which stands detached from the hospital, contains ten separate laboratories, each excellently equipped for its purpose.

Scottish National Gallery Extension.

To meet the cost of the proposed alterations to the Scottish National Gallery building, Edinburgh, a total expenditure of £11,380 has been sanctioned by the Treasury. It is anticipated that the work will be begun early in the ensuing financial year.

Manchester's Biggest Building.

The Calico Printers' Association are erecting new premises in Oxford Street, Manchester. The site covers an area of 6,454 square yards, the frontage being 306 ft. The building will be eleven storeys high, and the largest commercial house in the city.

New Hospital Buildings.

At Malvern a well-equipped new hospital has been erected from designs by Mr. William Henman, F.R.I.B.A. At the Radcliffe Infirmary, Oxford, new buildings are proposed to be erected, at a cost of about £25,000, from designs by Mr. Edward Warren, F.R.I.B.A.

Honorarium for Sheffield City Architect.

Mr. F. E. P. Edwardes, F.R.I.B.A., city architect of Sheffield, was formerly with the Bradford Corporation, and after leaving Bradford for Sheffield continued to act as consultant architect with regard to the extensions of the Town Hall. At the last meeting of the Bradford City Council Mr. Edwardes was voted an honorarium of 100 guineas in appreciation of his services.

OUR PLATE.

Design for Usher Hall, Edinburgh.

This design was placed fourth in the competition for the Usher Hall, Edinburgh. The building required was primarily a hall for music, but was also to be available for civic functions, oratory, and the various purposes usually associated with town halls. It was to form the nucleus of a school of music, and serve as a memorial to the benefactor.

The site given was roughly three sides of an oblong adjoining the Lyceum Theatre, and most of the schemes submitted, including the winner, made use of the whole site. In the present scheme, however, a new road was placed between the Lyceum Theatre and the new hall, giving isolation from fire risk, the maximum facilities for entrances and exits, a symmetrical grouping with the several thoroughfares, and, on the east side of the new road, a sufficient area was available for a suite of offices, not asked for in the conditions, but obviously very appropriate to the building, viz., committee rooms for the administration of the bequest and endowment, agent's rooms for the promotion of concerts, music-rooms for the convenience of artistes, and a large booking hall for bookings before date.

The floor of the hall seated 1,716, galleries 1,287; total, 3,003. Chorus gallery extra.

The author of the design is Mr. William Haywood, architect, 245, Bristol Road, Birmingham.

DETAILS—OLD AND NEW.—XIV.

Font Cover in St. Stephen's Church, Birmingham.

This font cover, designed by Mr. W. H. Bidlake, M.A., architect, of Birmingham, and carved by Mr. Haughton, of Worcester, is executed in oak. The design is very fresh and vigorous, and quite a thing apart from the customary modern Gothic model. The grouping of the angel figures is especially pleasing.

TRADE AND CRAFT.

English Oak.

Under the title "English Oak and its Application," Mr. John P. White, The Pyghtle Works, Bedford, and 134, New Bond Street, has issued an artistically designed booklet, in which several pages of photographic reproductions show some of the uses to which English oak is put in the manufacture, as pursued at the Pyghtle Works, of old English garden seats, chairs, tables, and gates (all for outdoor use), and of panelling, doors, etc., for interiors. Notable among the interior work are some beautiful doors and panelling executed at Longstowe Hall, Cambridge, from designs by Messrs. Simpson and Ayrton, architects. A short preface has a fine literary, artistic, and, it may be added, patriotic flavour, as the following quotation will serve to show: "Strength and endurance and a majestic beauty seem natural attributes of this, the most characteristic of our English trees. There are oaks still standing on English ground which must have been there when William the Norman came; and how far back dates the beginning of the trees for which the piles of old London Bridge were taken, who can tell? In 1827 those piles were taken up still sound after six and a half centuries' use." Bedford, it is stated, lies in the midst of the best oak-growing dis-

trict in the country, so that the Pyghtle works are very conveniently situated for getting together a fine collection of British oak; "and the stock in the yards, of all sizes and ages, represents many years of careful selection."

Brilliant Signs.

Nearly the whole of the signs for the Festival of Empire at the Crystal Palace—both the day and night signs—have been executed by the Brilliant Sign Co. (1907), Ltd., 38, Gray's Inn Road, W.C., and Paragon Works, Uxbridge Road, W., who at the present time have in hand a very large one for the National Gas Engine Company, measuring 50 ft. long by 3 ft. 6 in. deep. It will be illuminated, and will be one of the largest day and night signs in existence. It will be fixed on top of the power house, so as to be readable all over the grounds. The firm have also large contracts in hand for illuminated signs for the Great Northern, Great Western, Great Central, and Metropolitan and District Railways. The business of the illuminated sign department has grown to such an extent that in the extension of the firm's factory, which is now in course of progress, it is arranged that this department shall be increased to make room for another twenty hands.

Notice of Removal.

Mr. H. R. Denbigh, stone, lime, and granite merchant, Settle, Yorks, announces that owing to amalgamation of his business with that of Mr. Charles Waterhouse, he has decided to remove his office, and his address will now be Waterhouse, Denbigh and Co., Ltd., Bolton Wood Quarries, Bradford. He adds that Mr. Waterhouse's stone is well known, having been used by H.M. Office of Works, Midland Railway Company, and the principal buildings in Yorkshire.

The "All-Time" Damp Course.

In the notice in the Journal of June 7th, page 607, of Mr. Alex. G. Lee's "All-time" damp-course, the address was given incorrectly. The correct address is 14, John Street, Bedford Row, London, W.C.

LONDON ASSOCIATION OF MASTER DECORATORS.

The third annual dinner of the above association was held on June 12th, at the Holborn Restaurant, Mr. Jno. Anderson, the newly-elected President, in the chair.

After the usual loyal toasts, the President of the London Master Builders' Association, Mr. G. Bird Godson, proposed the toast of "The London Association of Master Decorators." He had been asking himself what was the paramount consideration in associations such as theirs, and he had come to the conclusion that it might all be embodied in the one word, "Unity." There was never a time when unity was more required than to-day, because they were all labouring under heavy burdens, which were rapidly being added to. They were certainly not in love with the Workmen's Compensation Act, and now the new proposal for insurance against sickness and unemployment placed additional burdens upon them. There was another side to this question of unity. He had had the honour of being a member of the Master Builders' Association now for nearly twelve years. Before that time he had looked upon his competitors almost as enemies, but now he was glad to say that his association with the members had made him many close personal friends. He advised them as a young society to do their level best in roping in new members. He knew the difficulty of such work, and that it was often discouraging; at the same time, it was not without its interest. Some men in the trade would doubtless say, "Let them work, we will get the benefit." On the other hand, there were very many unselfish men who were willing to give their time and go to considerable trouble in order to benefit the trade as a whole. He saw no reason why the Master Decorators' Association should not become a strong power.

Mr. Jno. Anderson, the President, in the course of his reply, said that one of the lines on which they had certainly made good progress was in connection with wallpaper, and they had reason to congratulate themselves upon the outcome of their actions in that connection. Most of those present

would remember that some time since some of the furniture houses were allowing the public full discounts on wallpapers, and that this most objectionable practice was stopped. Then, again, some years ago it was the custom for wallpaper manufacturers to send out circulars to architects offering a discount. This practice had also been discontinued. He wished the members would offer more suggestions, and also that when they were unfairly treated they would put the facts before the Council. There were few trades like that of decoration where goods were so often sold direct. In case of injustice, let decorators come to them, and they would receive every help and assistance. He might mention one instance of a palpable injustice in connection with the Water Board, who were apparently very anxious to get in every penny they could by making extra charges even where water was used for washing down the fronts of houses, and it was said even for washing a ceiling. Such demands were likely to grow, and he thought it was not wise to be unprepared; they should be ready for any emergency. He felt that if they were so wrong, the injustice about to be brought on the trade by insurance could be evaded. They might have competitors in the same trade and yet be on the very best of terms with each other. Then, again, there were very many points of information on practical and other matters that could be exchanged with advantage.

Mr. H. A. Campbell, the retiring president, proposed the toast of "The Kindred Associations." He said that he proposed this toast with feelings of very great pleasure. When the association was first formed, they put themselves into communication so that they might have the advantage of their experience. They approached the Institute of British Decorators, the National Association of Master House Painters and Decorators, and the Wallpaper Association, and they received valuable help from them. He thought they could not do better than bring all these associations into touch, and if they came together the fact of their being united would be of immense service. The kindred associations had done and were doing all they could to help, and they were doing all they could to merit their sympathy and assistance. The insurance scheme, the Workmen's Compensation Act, the Old Age Pensions, and the insurance against unemployment were all serious burdens to bear. They had become affiliated with the Builders' Association, which he thought would be of immense advantage. As a matter of fact, the master painters as a body in London were marvellously apathetic, but he thought that when they realised that they were not playing for their own ends, but working for the common good, then they would come in and join the association. He felt certain that in the future the association would be a very big affair. It would be able to show the public their side of the question; it would be able to show the manufacturers also their side of the question. He trusted that the kindred associations would help in resisting the proposal concerning insurance, etc.

Mr. Arthur Seymour Jennings responded, and said that he had been much struck in his travels by the very friendly feelings and absence of jealousy which existed between the various local and other associations, and he felt that if some scheme of constant communication could be formulated, it would be a very good thing for all concerned. So far as the proposed insurance was concerned, he had no doubt that every painters' association in the country would take the matter up, and would do their best to make representations in the proper quarter protesting against the proposal. Fortunately, they had in the National Association the means for doing this, and he hoped that steps would be immediately taken to make representations in the proper quarter. The Bill, he understood, although approved in its general terms, was very hard on the building trade, and it appeared to be almost a duty to make a protest in any case, and that at once. He had had the honour of being directly connected with Master Painters' Associations for the last twenty-five years and had been an honorary member of the Pennsylvania Association for some fifteen years. It might interest them to know what was done in America in associations. In the first place, it was the custom to have as far as possible a paper read at every meeting. This formed an attraction and ensured a fair attendance, because when there was only routine business to be done men would frequently not put in an appearance. If there was a paper on an interesting subject, however, they would. But there was another advantage, and a very distinct one, which had been very well demonstrated in connection with the London Paint and Varnish Society. As many of those present knew, this was a scientific society carried on on practical lines, and a paper was read at every meeting. These papers were published in the various periodicals of the technical Press, and the publicity thus obtained had had the result of bringing in members not only from this country, but from other parts of the world. He thought that if the London Master Decorators' Association would follow this plan, and have a paper read and published, it would prove of advantage.

Mr. W. G. Sutherland said he thought that they would have to abide by the Insurance Bill as it stood. If they worked it out, they would find that it would amount to one-fifth of a penny added to their insurance premium. That might mean, certainly, a considerable sum where a large number of men were employed, but he thought it would have to be faced. Painters as a rule very much disliked to discharge their men, but under the new scheme he thought that the employer, knowing that he had to pay unemployment insurance, would turn off such men much more quickly than hitherto. He mentioned that while on the Continent he took the

opportunity of visiting Hamburg, where it was proposed that the National Association should arrange to attend a very big convention of painters in August, during Bank Holiday week. The exhibition cost £22,000, and the series of rooms in which it is to be held were very beautifully decorated and furnished, the idea being to show what can be done in decoration.

The President then proposed the toast "Our Visitors." Mr. Arthur B. Sanderson, in response, said that he was himself a member of a kindred association, that of the Wallpaper Merchants, which had existed for fifteen years and embraced the whole trade.

Mr. F. Dakin, Vice-President, proposed the toast of "The President," who replied.

Mr. J. Fergus Duncan then proposed the health of the retiring President, Mr. H. A. Campbell, who responded.

FEDERATION NEWS.

Northern Counties Federation.

At the quarterly meeting in connection with the Northern Counties Federation of Building Trade Employers, held at the Marine Hotel, Seaton Carew, on June 14th, Mr. F. W. Ranken, of Sunderland, in the chair, the Government Insurance Bill was severely criticised.

The secretary (Mr. W. H. Hope) said that in accordance with instructions, he had applied to various offices for competitive prices for collective insurance for the members of the Federation so far as the workmen's compensation insurance was concerned. He had applied to the usual companies, most of whom were non-tariff. In every case he had met with a refusal to quote for collective insurance. The experience of the past seemed to have been so unfortunate during the working of the Compensation Act, that the companies were not willing to commit themselves to anything. Last year it was calculated that the ratio of loss, taking the workmen's compensation insurance all round, was 130 per cent., so that for every £100 received in premium they had had to pay out £130. The recommendation of the executive was that they should leave well alone and go on with the present company, who had given their rates for the ensuing year with a rise of 2s. 6d in 20s.—that was a 12½ per cent. increase.

The meeting agreed to the recommendation of the executive.

THE NATIONAL INSURANCE BILL.—The meeting proceeded to discuss the Bill for National Insurance, and a report of the Executive Council relating to the question was submitted as under.

In the first place your council feel that no substantial reason has yet been advanced for imposing upon the employers the burden of financing the insurance of the health of their workpeople. The benefit of this insurance will be reaped directly by the workpeople themselves and indirectly by the State. The employers will gain nothing personally to make them a party to the measure, and their trade is not able to bear the constant imposition of burden upon burden in the way of legislation and taxation. The present Bill entails greater hardships upon them than those sought to be alleviated. The number of employers is comparatively small compared with their workpeople, but with the shrinkage of profits due to keenness of competition and a lessened demand for building works, the burdens of the few are becoming intolerable. If the question is a national benefit, then the nation should shoulder the burden, and with those who directly benefit, make good the cost. It may be urged that the employer has only to add the cost of insurance to his price and the public who contract with him will pay it. The answer to this is that the contractor has not been able to reimburse himself the taxation imposed by the Workmen's Compensation Act, which amounts to about 3d. an hour on the wages of the workman, and there is no doubt that increases in the price of the work reduce the amount of work required, to the mutual disadvantage of employer and employed.

Your committee feel that health insurance and accident insurance should have been dealt with as a whole, as they are inter-dependent; a perusal of the provisions of the first part of the Bill and the reference to the benefits under the Workmen's Compensation Acts therein will prove this. They feel that such a procedure would have been more desirable than linking up with health insurance the question of unemployment. They feel that scant justice has been done to the very important matter of unemployment, and the latter part of the measure is just the skeleton of a Bill, which leaves much to the imagination of the legislature, the ingenuity of the Board of Trade, and the resources of the Treasury. The part of the Bill dealing with unemployment appears to have been much less matured than that dealing with health insurance, and has caused the promoters of the Bill to leave a great many details to be filled in later. It is legislation by reference of the worst kind, and the proposal to sever the Bill and take it in two parts is certainly one to be supported. All means should be used to prevent rushing such a stupendous piece of legislation through Parliament without the fullest consideration.

It should be observed that approved societies, which, generally speaking, embrace the men's societies and unions, as well as the friendly societies, become vested with very great powers, and there is no corresponding body of employers with a voice in the conduct of these great schemes.

Even the local health committees are packed with the representatives of the workmen, who may be two-thirds of the committee, while one-third is nominated by the local sanitary authorities. It is to these bodies that the adjustment of the rights of the employers and employed alike are handed over. These bodies grant certificates of exemption; they prescribe and administer the insurance benefits; they become to some extent arbitration courts, and can forbid a workman who is insured under the Bill to settle any claim he may have under the Workmen's Compensation Act; and they may finance and prosecute a claim, if they think fit, for workmen's compensation against the employer in the interests of the insured sick or disabled workman, and they may place a weekly value on any sum which may be recovered, and, if the weekly value is large enough, it will relieve the society from payment of the health or sickness benefit. On the other hand, where there is a superannuation fund which is financed by the employer, if it is to come within the provisions of the Bill as an approved society, the representation of the employer in the conduct of the fund is limited to a fourth irrespective of his contributions to the fund, which may be 50 per cent. or more.

It is provided by the Bill that the Insurance Commissioners shall appoint advisory committees, consisting of representatives of associations of employers and approved societies. The function of such committees is to tender to the Insurance Commissioners advice only upon matters of health insurance. The Bill provides that the Board of Trade shall determine the constitution of courts of referees chosen from panels of persons representing employers and workmen. These should be competent persons nominated by the association of employers and workmen. Local health committees are to be appointed, and the Insurance Commissioners may appoint officers, inspectors, referees, and servants, who will go to swell the number, not inconsiderable, of those whose duty it is to watch the conduct of employers' works, if not to embarrass, very often, the management. The Board of Trade, too, will set up its army of officers and inspectors with very inquisitorial powers in matters of unemployment. An approved society or health committee can set in motion an enquiry where excessive sickness among insured workmen is alleged to be due to any neglect on the part of any employer in observing or enforcing any such Act or regulation, and the employer may be compelled to make good the extra benefits disbursed on account of such sickness, but no attempt is made to penalise the workman, who may be more at fault than anyone else. Many contractors and builders are property owners, and again they are made the butt of an enquiry and may have to bear a similar outlay as that just mentioned under similar circumstances if their property is not in perfect order. On the other hand, if the property is maintained in perfect order the owner may find that he is without his rent or any remedy to recover it for twelve months, if his sick tenant is an insured person. This is probably the most violent legislative outrage upon property, if it becomes law, that has been perpetrated. Care should be taken to ascertain definitely what is meant by the expression "continually unemployed," as defined in the Bill. Apparently an insured workman may work for two days and then be idle two days, or work a week and be idle another week, and yet be continually unemployed.

Your committee recommend that the National Federation and the Employers' Parliamentary Council be urged to watch very carefully the progress of the measure, and take the necessary steps to have such amendments as are considered advisable introduced into the Bill through its different stages.

The Chairman said that at the last Executive Council they had the Bill before them. They were of the opinion that there were grave matters in it affecting the trade which ought to be put before the proper quarters. They must enter their protest against the Bill as soon as possible.

Mr. Robertson, of South Shields, referred to Clause 51 in the Bill, which, he said, enabled a tenant to live rent free for twelve months if he was sick. It was a very serious matter for a builder who was also a property owner. If a tenant got back in his rent through sickness there was no getting the back rents. The tenant was in a position to defy the landlord.

Mr. Heslop, of Newcastle, characterised the Bill as a malicious and vindictive attack upon the thrifty and the property owners of this country. Property owners were not all members of the House of Lords. Many men had risen from the bottom rung of the ladder to the position in which they were to-day, not by State aid, not by State assistance, but by determination, by their own thrift, and by their own industry. They as a trade would be remiss in their duty if they did not voice their opinion in denouncing this measure. He moved the adoption of the recommendation.

The Chairman thought they should send the circular to the local members of Parliament, as well as to the Parliamentary Committee of the Federation.

Mr. Proud, who seconded, said that even the Parliamentary Committee, who waited as a deputation in the House of Commons, could not get a man on either side of the House to move the rejection of the Bill. Members of Parliament were afraid to show their hands. Some of the proposals of the Bill were simply monstrous. One of the clauses dealing with the marking of the cards was of serious import. In the builder's business they might have ten or twelve jobs going on and a few men working at each job. They were under a penalty if they did not stamp and sign a man's card when he was paid on a Saturday. 2218-
The recommendation was agreed to.

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